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REGISTER

1904-05

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LELAND STANFORD JUNIOR UNIVERSITY

FOURTEENTH
ANNUAL REGISTER
1904-05

"The beneficence of the Creator towards man on earth, and the possibilities of humanity, are one and the same."—LELAND STANFORD.

"A generous education is the birthright of every man and woman in America."

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
APRIL, 1905

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OFFICE DIRECTORY*

The office of the PRESIDENT is room 112.

The office of the REGISTRAR is room 116.

The office of the SECRETARY is room 110.

The office of the TREASURER is room 250.

The office of the ASSOCIATE PROFESSOR OF HYGIENE is room 61.

The various Departmental offices are given in the SCHEDULE and in the DIRECTORY OF OFFICERS AND STUDENTS.

The University Post, Telegraph, and Telephone Office is *Stanford University, California.*

The University Railway Station and Express Office is *Palo Alto, California.*

Requests for *Registers,* blanks, and other printed matter, and inquiries regarding terms of admission, advanced standing, etc., should be addressed to *The Registrar, Stanford University, Cal.*

[*The rooms in the Inner Quadrangle are numbered consecutively, beginning at the left of the main entrance, ten numbers being allotted to each building. In the Outer Quadrangle forty numbers are allotted to each of the larger buildings and ten numbers to each one-story building, beginning with the Assembly Hall and number 120. The engineering buildings south of the Quadrangles begin with number 500. The Chemistry building is on the west avenue between the Quadrangles and the Museum.]

UNIVERSITY CALENDAR

1904

Aug.	25	Thursday.....Entrance Examinations begin.
Aug.	30	Tuesday.....Registration of Matriculated Students.
Aug.	31	Wednesday ....Registration of New Students.
Sept.	1	Thursday .....Instruction begins.
Sept.	9	Friday .....Conferring of Degrees.
Nov.	24	Thursday .... } Thanksgiving Recess.
Nov.	27	Sunday ..... }
Dec.	22	Thursday .....First Semester ends.

1905

Jan.	6	Friday .....Entrance Examinations begin.
Jan.	10	Tuesday.....Registration for Second Semester.
Jan.	11	Wednesday ....Instruction begins.
Jan.	13	Friday .....Mid-Year Conferring of Degrees.
Feb.	22	Wednesday ....Washington's Birthday.
Mar.	9	Thursday.....Founder's Day.
April	1	Saturday..... } Mid-Semester Recess.
April	9	Sunday ..... }
May	14	Sunday.....Memorial Day.
May	18	Thursday .....Instruction ends.
May	19-20	Fri.-Sat.....Entrance Examinations in English.
May	21	Sunday.....Baccalaureate Sunday.
May	22	Monday .....Class Day.
May	23	Tuesday.....Alumni Day.
May	24	Wednesday ....Commencement.

Aug.	24	Thursday .....Entrance Examinations begin.
Aug.	29	Tuesday .....Registration of Matriculated Students.
Aug.	30	Wednesday.....Registration of New Students.
Aug.	31	Thursday .....Instruction begins.
Sept.	8	Friday .....Conferring of Degrees.
Nov.	30	Thursday .... } Thanksgiving Recess.
Dec.	3	Sunday ..... }
Dec.	22	Friday.....First Semester ends.

1906

Jan.	5	Friday.....Entrance Examinations begin.
Jan.	9	Tuesday .....Registration for Second Semester.
Mar.	30	Friday .....Mid-Semester Recess begins.
May	23	Wednesday ....Commencement.

ADMINISTRATIVE OFFICERS

BOARD OF TRUSTEES

*JANE LATHROP STANFORD, President.
SAMUEL FRANKLIN LEIB, A. B., Vice-president, Farmers' Union Bldg., San Jose
CHARLES GARDNER LATHROP, Treasurer, Stanford University
GEORGE EDWARD CROTHERS, A. M., Secretary and Assistant Treasurer, Mills Building, San Francisco
TIMOTHY HOPKINS, Mills Building, San Francisco
HORACE DAVIS, A. M., 133 Spear St., San Francisco
THOMAS BARD McFARLAND, A. B., 825 Market St., San Francisco
GEORGE EDWARD GRAY, 1155 Bush St., San Francisco
JOSEPH DONOHOE GRANT, A. B., Bush and Sansome Sts., San Francisco
LEON SLOSS, 645 Market St., San Francisco
THOMAS WELTON STANFORD, Melbourne, Australia
FRANK MILLER, Sacramento
WHITELAW REID, A. M., LL. D., *The Tribune*, New York, N. Y.
WILLIAM BABCOCK, 306 California St., San Francisco
CHARLES P. EELS, A. B., 324 Pine St., San Francisco

STANDING COMMITTEES OF THE TRUSTEES

Finance: LATHROP, Mrs. STANFORD, GRAY, LEIB, MILLER, SLOSS, CROTHERS.

University: LEIB, DAVIS, McFARLAND, REID, GRANT, HOPKINS, Mrs. STANFORD.

Auditing, Organization, and Rules: DAVIS, Mrs. STANFORD, REID, GRANT, CROTHERS, McFARLAND, SLOSS.

Museum: Mrs. STANFORD, T. W. STANFORD, HOPKINS, MILLER.

Memorial Church: Mrs. STANFORD, LATHROP, T. W. STANFORD.

*Died, February 28, 1905.

THE UNIVERSITY

President: David Starr Jordan.
Vice-President: John Caspar Branner.
Registrar: Orrin Leslie Elliott.
Associate Librarian: Melvin Gilbert Dodge.
Secretary to the President: George Archibald Clark.

EXECUTIVE HEADS OF DEPARTMENTS

Greek: Augustus Taber Murray.
Latin: Henry Rushton Fairclough.
Germanic Languages: Julius Goebel.
Romanic Languages: John Ernst Matzke.
English Philology: Edward Flügel.
English Literature and Rhetoric: Melville Best Anderson.
Philosophy: Frank Angell.*
Psychology: Frank Angell.
Education: Ellwood P. Cubberley.
History: Max Farrand.
Economics and Social Science: Simon James McLean.*
Law: Nathan Abbott.
Drawing: Arthur Bridgman Clark.
Mathematics: Robert Edgar Allardice.
Applied Mathematics: Leander Miller Hoskins.
Physics: Fernando Sanford.
Chemistry: John Maxson Stillman.
Botany: Douglas Houghton Campbell.
Systematic Botany and Forestry: William Russell Dudley.
Physiology and Histology: Oliver Peebles Jenkins.
Hygiene: William Freeman Snow.*
Zoology: Charles Henry Gilbert.
Entomology and Bionomics: Vernon Lyman Kellogg.
Geology and Mining: John Casper Branner.
Civil Engineering: Charles David Marx.
Mechanical Engineering: William Frederick Durand.
Electrical Engineering: William Frederick Durand.*

*Acting.

STANDING COMMITTEES OF THE ACADEMIC COUNCIL

ADVISORY BOARD

STILLMAN, chairman; MURRAY, secretary; ABBOTT, ANGELL, BRANNER, GILBERT, HOSKINS, C. D. MARX, SANFORD.

ADMINISTRATIVE COMMITTEES

1. **Student Affairs:** GREEN, GRIFFIN, LENOX, SHOW, ROGERS.
2. **Athletics:** ANGELL, ADAMS, SNOW, SEARLES, DURAND.
3. **Public Exercises:** NEWCOMER, DUNIWAY, FARRAND, ROLFE, MORENO.
4. **Literary Contests:** DUNIWAY, ALDEN, MCLEAN, ELMORE, LEWERS.
5. **Public Health:** SNOW, GILBERT, SHOW.
6. **Delinquent Scholarship:** GILBERT, ELLIOTT, PEIRCE, MURRAY, HOSKINS.
7. **Public Entertainments:** YOUNG, MARX, ADAMS, SEARLES, SEWARD.

ACADEMIC COMMITTEES

1. **Executive Committee:** JORDAN, BRANNER, ELLIOTT, FAIRCLOUGH, NEWCOMER, CAMPBELL, GILBERT, GREEN, SANFORD, FARRAND, MCLEAN, CLARK, WING.
2. **Admission and Advanced Standing:** ELLIOTT, SHOW, MATZKE, HOSKINS, SNEDDEN.
3. **Registration:** ELLIOTT, FISH, HEATH, SNOW, MCLEAN.
4. **Graduation:** ELLIOTT, G. H. MARX, MATZKE, PRICE, ROGERS.
5. **Schedule and Examinations:** ELLIOTT, ABBOTT, MURRAY, CAMPBELL, FARRAND.
6. **Graduate Study:** MURRAY, DUDLEY, ANGELL, HOSKINS, MATZKE.
7. **Library:** STILLMAN, FARRAND, FRANKLIN, WING, ADAMS.
8. **University Publications:** FAIRCLOUGH, DUNIWAY, SMITH, ANDERSON, MCFARLAND.

FACULTY AND OTHER OFFICERS*

DAVID STARR JORDAN, President of the University.
Xazmin House, Serra Ave.

M. S., Cornell University, 1872; M. D., Indiana Medical College, 1875; Ph. D., Butler University, 1878; LL. D., Cornell University, 1886, Johns Hopkins University, 1902. Instructor in Botany, Cornell University, 1871-72; Professor of Natural History, Lombard University, 1872-73; Principal of Appleton (Wis.) Collegiate Institute, 1873-74; Student and afterward Lecturer in Marine Botany, Anderson School at Penikese, 1874; Teacher of Natural History, Indianapolis High School, 1874-75; Professor of Biology, Butler University, 1875-79; Assistant to the U. S. Fish Commission, 1877-91; Professor of Zoology, Indiana University, 1879-85; President of the Indiana University, 1885-91; President of the California Academy of Sciences, 1896-98, 1901-03; U. S. Commissioner in charge of Fur Seal Investigations, 1896-98.

†JOHN CASPER BRANNER, Vice-President, and Professor of Geology. 13 Alvarado Row.

B. S., Cornell University, 1882; Ph. D., Indiana University, 1885; LL. D., University of Arkansas, 1897. Assistant Geologist, Imperial Geological Survey of Brazil, 1875-78; Special Botanist in South America, 1880-81; Special Agent of the U. S. Department of Agriculture for Investigating Cotton and the insects affecting it in Brazil, 1882-83; Topographical Geologist of the Geological Survey of Pennsylvania, Anthracite District, 1883-85; Professor of Geology, Indiana University, 1885-91; State Geologist of Arkansas, 1887-92.

OLIVER PEEBLES JENKINS, Professor of Physiology and Histology. 3 Lasuen St.

A. B., Moore's Hill College, 1869, A. M., 1872; M. S., Indiana University, 1886, Ph. D., 1889. Professor of Natural Science, Moore's Hill College, 1876-82; Professor of Natural Science, Indiana State Normal School, 1883-86; Professor of Biology, De Pauw University, 1886-91.

MELVILLE BEST ANDERSON, Professor of English Literature. Menlo Park.

A. M., Butler University. 1877. Professor of Modern Languages, Butler University, 1877-80; Professor of English Literature, Knox College, 1881-86; Professor of Literature and History, Purdue University, 1886-87; Professor of the English Language and Literature, University of Iowa, 1887-91.

JOHN MAXSON STILLMAN, Professor of Chemistry 2 Alvarado Row.

Ph. B., University of California, 1874, Ph. D., 1885. Assistant in Chemistry, University of California, 1873-75; Student in Chemistry, Strassburg and Würzburg, 1875-76; Instructor in Organic and General Chemistry, University of California, 1876-82; Chemist of the Boston and American Sugar Refining Company, 1882-92.

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*Arranged in groups in the order of seniority of appointment. For Alphabetical Directory of Officers, with post-office address, see p. 216.

†Absent on leave, first semester, 1904-05.

FERNANDO SANFORD, Professor of Physics.
450 Kingsley Ave.

B. S., Carthage College, 1879, M. S., 1882; Student, University of Berlin, 1886-88; Professor of Physical Science, Mt. Morris College, 1879-82; Superintendent of Schools, Ogle County, Ill., 1882-86; Instructor in Physics and Chemistry, Englewood (Ill.) High School, 1888-90; Professor of Physical Science, Lake Forest University, 1890-91.

CHARLES DAVID MARX, Professor of Civil Engineering.
357 Kingsley Ave.

B. C. E., Cornell University, 1878; C. E., Karlsruhe Polytechnicum, 1881. Instructor in Civil Engineering, Karlsruhe Polytechnicum, 1880-81; U. S. Assistant Engineer, Missouri River Improvement, 1882-84; Assistant Professor of Civil Engineering, Cornell University. 1884-90; Professor of Civil Engineering, University of Wisconsin, 1890-91.

CHARLES HENRY GILBERT, Professor of Zoology.
433 Melville Ave.

B. S., Butler University, 1879; M. S., Indiana University, 1882, Ph. D., 1883. Assistant in Natural Sciences and Modern Languages, Indiana University, 1880-84; Professor of Natural History, University of Cincinnati, 1884-88; Professor of Zoology, Indiana University, 1888-91; Assistant to the U. S. Fish Commission, 1880-91.

DOUGLAS HOUGHTON CAMPBELL, Professor of Botany.
19 Salvatierra St.

Ph. M., University of Michigan, 1882. Ph. D., 1886. Teacher of Biology, Detroit High School, 1882-86; Student at Bonn, Tübingen, and Berlin, 1886-88; Professor of Botany, Indiana University, 1888-91.

†EWALD FLÜGEL, Professor of English Philology.
1153 Cowper St.

Ph. D., University of Leipzig, 1886. Student, Universities of Freiburg and Leipzig, 1882-88; Privat Docent, University of Leipzig, 1888-92.

CHARLES BENJAMIN WING, Professor of Structural Engineering.
345 Lincoln Ave.

C. E., Cornell University, 1886. Fellow in Civil Engineering, Cornell University, 1886-87, Instructor, 1887-90, Assistant Professor, 1890-91; Engineer, Pompton (N. J.) Powder Co., 1887, Phœnix Powder Co., Farmingdale, N. J., 1888; Assistant Engineer, Berlin (Conn.) Iron Bridge Co., 1889-90; Professor of Bridge and Hydraulic Engineering, University of Wisconsin, 1891-92.

FRANK ANGELL, Professor of Psychology.
1146 Waverley St.

B. S., University of Vermont, 1878; Ph. D., University of Leipzig, 1891; L. H. D., University of Vermont, 1892. Teacher in Washington (D. C.) High School, 1880-87; Assistant Professor of Psychology, Cornell University, 1891-92.

LEANDER MILLER HOSKINS, Professor of Applied Mathematics.
365 Lincoln Ave.

B. C. E. and B. S., University of Wisconsin, 1883, M. S., 1885, C. E., 1887. Instructor in Engineering, University of Wisconsin, 1885-89, Assistant Professor of Mechanics, 1889-91, Professor of Theoretical and Applied Mechanics, 1891-92.

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†Absent on leave, 1904-05.

†ROBERT EDGAR ALLARDICE, Professor of Mathematics. [In Europe.]

A. M., University of Edinburg, 1882. Baxter Scholar in Mathematics, University of Edinburg, 1882-83, Drummond Scholar in Mathematics, 1883-84; Assistant Professor of Mathematics, University of Edinburg, 1883-92.

WILLIAM RUSSELL DUDLEY, Professor of Botany. 318 Lincoln Ave.

B. S., Cornell University, 1874, M. S., 1876. Student, Summer School, Penikese, 1874, Harvard University, 1876, Universities of Strassburg and Berlin, 1887-88; Instructor in Botany, Cornell University, 1872-76, Assistant Professor, 1876-92.

AUGUSTUS TABER MURRAY, Professor of Greek. 1019 Bryant St.

A. B., Haverford College, 1885; Ph. D., Johns Hopkins University, 1890. Fellow in Johns Hopkins University, 1887-88; Professor of Greek, Earlham College, 1888-90; Student, Universities of Leipzig and Berlin, 1890-91; Professor of Greek, Colorado College, 1891-92.

JULIUS GOEBEL, Professor of Germanic Philology and Literature. 1247 Cowper St.

Ph. D., University of Tübingen, 1882. Student, University of Leipzig, 1879-81; Instructor in German, Johns Hopkins University, 1885-88; Editor *Belletristisches Journal,* 1888-92.

NATHAN ABBOTT, Professor of Law. 318 Lincoln Ave.

A. B., Yale University, 1877; LL. B., Boston University, 1893. Professor of Law, University of Michigan, 1891-92; Professor of Law, Northwestern University, 1892-94.

JOHN ERNST MATZKE, Professor of Romanic Languages. 1211 Bryant St.

A. B., Hope College, 1882; Ph. D., Johns Hopkins University, 1888. Professor of French, Bowdoin College, 1889-90; Professor of the Romanic Languages, Indiana University, 1890-91; Associate in the Romanic Languages, Johns Hopkins University, 1891-93.

JAMES OWEN GRIFFIN, Professor of German. 14 Alvarado Row.

Graduate of the Pennsylvania State Normal School, 1873. Teacher in Pennsylvania State Normal School, 1873-74; Principal, Unadilla (N. Y.) Academy, 1874-79; Student, University of Göttingen, 1879-80; Principal of Delaware Academy (Delhi, N. Y.), 1880-85; Instructor in German, Cornell University, 1885-91, Registrar, 1890-91.

RUFUS LOT GREEN, Professor of Mathematics. 13 Salvatierra St.

B. S., Indiana University, 1885, A. M., 1890. Instructor in Mathematics, Indiana University, 1885-86; Student, Johns Hopkins University, 1886-87; Professor of Pure Mathematics, Indiana University, 1887-93.

ARLEY BARTHLOW SHOW, Professor of Mediæval History. 353 Melville Ave.

A. B., Doane College, 1882; Graduate, Andover Theological Seminary, 1885; A. M., Doane College, 1892. Pastor, Congregational Church, Waco, Neb., 1885-87; Professor of History and English Literature, Doane College, 1887-92; Student, University of Leipzig, 1900-01.

†Absent on leave, 1904-05.

ORRIN LESLIE ELLIOTT, Registrar. 12 Alvarado Row.

Ph. B., Cornell University, 1885, Ph. D., 1890. Fellow in History and Political Science, Cornell University, 1885-86, Instructor in English, 1886-91, Assistant Registrar and President's Secretary, 1890-91.

†VERNON LYMAN KELLOGG, Professor of Entomology, and Lecturer in Bionomics. [In Europe.]

B. S., University of Kansas, 1889, M. S., 1892. Student, Cornell University, 1891, University of Leipzig, 1893; Assistant Professor of Entomology, University of Kansas, 1890-93, Associate Professor, 1893-94.

JAMES PERRIN SMITH, Professor of Paleontology. 1251 Bryant St.

A. M., Vanderbilt University, 1886; Ph. D., University of Göttingen, 1892. Assistant Geologist and Chemist, Arkansas Geological Survey, 1887-90.

LIONEL REMOND LENOX, Professor of Analytical Chemistry. Castro.

Ph. B., Columbia College, 1888. Assistant Chemist, Bethlehem Iron Co., 1887; Instructor in Chemistry, Lehigh University, 1888-91; Chemist, Ordnance Department, U. S. N., Washington, D. C., 1891-92.

HENRY RUSHTON FAIRCLOUGH, Professor of Latin. 6 Alvarado Row.

A. B., University of Toronto, 1883, A. M., 1886; Ph. D., Johns Hopkins University, 1896. Fellow in Classics, University College, Toronto, 1883-84; Classical and English Master, Brockville High School, 1884-86; Graduate Scholar, Johns Hopkins University, 1886-87, Fellow, 1887; Lecturer in Greek and Ancient History, University College, Toronto, 1887-93.

MAX FARRAND, Professor of History. 19 Salvatierra St.

A. B., Princeton University, 1892, A. M., 1893, Ph. D., 1896. Boudinot Fellow in History, Princeton University, 1892-93, Fellow in Social Science, 1893-94; Student, Universities of Leipzig and Heidelberg, 1894-96; Instructor in History, Wesleyan University, 1896-98, Associate Professor, 1898-99, Professor, 1899-1901.

WILLIAM FREDERICK DURAND, Professor of Mechanical Engineering. 3 Salvatierra St.

Graduate U. S. Naval Academy, 1880; Ph. D., Lafayette College, 1888. Engineer Corps, U. S. Navy, 1880-87; Special Duty as Assistant Professor of Mechanical Engineering, Lafayette College, 1883-85, Worcester Polytechnic Institute, 1887; Professor of Mechanics and Superintendent of Mechanical Department, Michigan State Agricultural and Mechanical College, 1887-91; Professor of Marine Engineering and Principal Graduate School of Naval Architecture and Marine Engineering, Cornell University, 1891-1904.

‡HARRIS JOSEPH RYAN, Professor of Electrical Engineering.

M. E., Cornell University, 1887. With Western Engineering Co., Lincoln, Neb., 1887-88; Instructor in Physics, Cornell University, 1888-89, Assistant Professor of Electrical Engineering, 1889-92, Associate Professor, 1892-95, Professor, 1895-1905; Judge, Board of Awards, World's Fair, Chicago, 1893; U. S. Government Delegate, International Electrical Congress, Universal Exposition, St. Louis, 1904.

§WILLIAM JAMES, Acting Professor of Philosophy.

M. D., Harvard University, 1870; LL. D., Princeton and Edinburgh; Ph. D. and Litt. D., Padua. Professor of Philosophy, Harvard University, since 1872.

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†Absent on leave, 1904-05.
‡Beginning August, 1905.
§ For 1905-06.

ALPHONSO GERALD NEWCOMER, Associate Professor of English. Forest Court.

A. B., University of Michigan, 1887; A. M., Cornell University, 1888. Fellow in Classics, Cornell University, 1887-88; Principal, Mt. Morris (Ill.) H. S., 1888-89; Instructor in Latin and French, Knox College, 1889-91.

ARTHUR BRIDGMAN CLARK, Associate Professor of Drawing. College Terrace.

B. Ar., Syracuse University, 1888, M. Ar., 1891. Director of Trade Schools and Instructor in Drawing, New York State Reformatory, Elmira, N. Y., 1888-89; Instructor in Architecture, Syracuse University, 1889-92.

FRANK MACE McFARLAND, Associate Professor of Histology. 943 Scott St.

Ph. B., De Pauw University, 1889; A. M., Leland Stanford Jr. University, 1893; Ph. D., University of Würzburg, 1896. Assistant in Biology, De Pauw University, 1888-89; Professor of Biology, Olivet College, 1889-92; Student, Würzburg, Zürich, and Naples, 1894-96.

GEORGE CLINTON PRICE, Associate Professor of Zoology. 5 Salvatierra St.

B. S., De Pauw University, 1890; Ph. D., Leland Stanford Jr. University, 1897. Student in Biology, Johns Hopkins University, 1890-92. University of Münich, 1895-96.

JOHN CHARLES LOUNSBURY FISH, Associate Professor of Civil Engineering. 382 Lincoln Ave.

C. E., Cornell University, 1892. Instructor in Civil Engineering, Cornell University, 1892-93.

†ELLWOOD P. CUBBERLEY, Associate Professor of Education. [415 W. 118th St., New York, N. Y.]

A. B., Indiana University, 1891; A. M., Columbia University, 1902. Professor of Physical Science, Vincennes University (Ind.), 1891-93, President, 1893-96; Superintendent of City Schools, San Diego, Cal., 1896-98.

GUIDO HUGO MARX, Associate Professor of Mechanical Engineering. 356 Lincoln Ave.

M. E., Cornell University, 1893. With Gleason Tool Co., Rochester, N. Y., 1893-94; with Bement, Miles & Co., Philadelphia, 1894-95.

CLYDE AUGUSTUS DUNIWAY, Associate Professor of History. 5 Alvarado Row.

A. B., Cornell University, 1892; A. M., Harvard University, 1894, Ph. D., 1897. Instructor in History, Harvard University and Radcliffe College, 1896-97.

GEORGE ARCHIBALD CLARK, Secretary to the President. 7 Alvarado Row.

B. L., University of Minnesota, 1891. Secretary, U. S. Fur Seal Commission, 1896-98.

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†Absent on leave, 1904-05.

GEORGE JAMES PEIRCE, Associate Professor of Botany and Plant Physiology. 943 Bryant St.

B. S., Harvard University, 1890; Ph. D., University of Leipzig, 1894. Assistant in Botany, Harvard University and Radcliffe College, 1890-92; Parker Fellow in Harvard University, studying in Bonn, Leipzig, and Münich, 1892-94; Assistant Professor of Botany, Indiana University, 1895-97.

†HERMAN DE CLERCQ STEARNS, Associate Professor of Physics. [Streator, Ill.]

A. B., Leland Stanford Jr. University, 1892, A. M., 1893. Student, University of Berlin, 1897-98.

OLIVER MARTIN JOHNSTON, Associate Professor of Romanic Languages. 4 Alvarado Row.

A. B., Mississippi College, 1890, A. M., 1892; Ph. D., Johns Hopkins University, 1896. Principal, Preparatory Department, Mississippi College, 1890-91, Professor of English and History, 1891-93; Fellow in Johns Hopkins University, 1895-96; Lecturer in French Philology, Bryn Mawr College, 1896-97.

STEWART WOODFORD YOUNG, Associate Professor of Chemistry. 1146 Waverly St.

B. S., Cornell University, 1890. Assistant in Chemistry, Cornell University, 1890-91; Instructor in Chemistry, Swarthmore College, 1891-93.

MELVIN GILBERT DODGE, Associate Librarian. 6 Alvarado Row.

A. B., Hamilton College, 1890, A. M., 1894. Librarian, Hamilton College, 1892-1901.

JOHN FLESHER NEWSOM, Associate Professor of Mining. 10 Alvarado Row.

A. B., Indiana University, 1891; A. M., Leland Stanford Jr. University, 1893, Ph. D., 1901. Assistant, Arkansas Geological Survey, 1891-95; Instructor in Geology, Indiana University, 1894-96, Assistant Professor, 1896-98.

EPHRAIM DOUGLASS ADAMS, Associate Professor of History. 3 Alvarado Row.

A. B., University of Michigan, 1887, Ph. D., 1890. Principal of High School, McGregor, Ia., 1887; Principal of High School, Saginaw, Mich., 1889; Special Agent in Charge of Street Railways, Eleventh Census, Washington, D. C., 1890; Assistant Professor and afterward Professor of European History, University of Kansas, 1891-1902.

SIMON JAMES McLEAN, Associate Professor of Economics. 315 Melville Ave.

A. B., University of Toronto, 1894, LL. B., 1895; A. M., Columbia University, 1896; Ph. D., University of Chicago, 1897. Ramsay Postgraduate Scholar in Economics, University of Toronto, 1894, Mackenzie Fellow in Political Science, 1894-95, Examiner in Economics and Constitutional History, 1895-97; Fellow in Economics and Sociology, Columbia University, 1895-96; Fellow in Economics, University of Chicago, 1896-97; Professor of Economics and Sociology, University of Arkansas, 1897-1902; Advisory Work for Department of Railways and Canals, Canada, 1898-99; Special Commissioner of Railway Rate Grievances, 1901; Expert Special Agent on Railway Valuation, Bureau of the United States Census, 1904-05.

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†Absent on leave, 1904-05.

HENRY WINCHESTER ROLFE, Associate Professor of Greek.
1057 Ramona St.

A. B., Amherst College, 1880, A. M., 1885. Student, University of Leipzig, 1881-83; Instructor in English, Cornell University, 1883-85; Professor of Latin, Swarthmore College, 1885-90; Lecturer on Latin Literature to Postgraduate Students, University of Pennsylvania, 1891-92; University Extension Lecturer, 1891-1900.

DAVID CHARLES GARDNER, Chaplain of the University Memorial Church. 1A Alvarado Row.

Scholar, Lord Scudamore's School, Hereford, England; Student under Farquhar McKerrow, Usk Grammar School, Monmouthshire, England; Graduate, Church Divinity School of the Pacific, San Mateo, 1897; Curate, St. James Mission, San Francisco, 1898; Rector of All Saints' Church, Palo Alto, 1898-1902.

EDWARD CURTIS FRANKLIN, Associate Professor of Organic Chemistry. 1116 Ramona St.

B. S., University of Kansas, 1888, M. S., 1890; Ph. D., Johns Hopkins University, 1894. Chemist to the Palo Alto Plantation and Sugar Factory, Donaldsville, Ga., 1888; Chemist to the Bella Vista Mining and Milling Co., Los Quemados, Costa Rica, 1897; Instructor in Chemistry, University of Kansas, 1888-90; Student at Berlin, 1890-91; Assistant in Chemistry, University of Kansas, 1891-93, Associate Professor, 1894-99, Professor of Physical Chemistry, 1899-1903.

HAROLD HEATH, Associate Professor of Zoology.
711 Cowper St.

A. B., Ohio Wesleyan University, 1893; Ph. D., University of Pennsylvania, 1898. Assistant in Biology, Ohio Wesleyan University, 1891-93; Professor of Biology, University of the Pacific, 1893-94; Harrison Fellow in Zoology, University of Pennsylvania, 1896-98.

GEORGE ABRAM MILLER, Associate Professor of Mathematics. 159 Encina Hall.

A. B., Muhlenberg College, 1887; Ph. D., Cumberland University, 1892. Professor of Mathematics, Eureka College, 1888-93; Instructor in Mathematics, University of Michigan, 1893-95; Student, Universities of Leipzig and Paris, 1895-97; Instructor in Mathematics, Cornell University, 1897-1901; Instructor in Mathematics, University of Chicago, summer session, 1898.

WILLIAM FREEMAN SNOW, Associate Professor of Hygiene.
9 Salvatierra St.

A. B., Leland Stanford Jr. University, 1896, A. M., 1897; M. D., Cooper Medical College, 1900. Student, Johns Hopkins Medical School, 1901-02.

‡GEORGE HERBERT ROWE, Associate Professor of Electrical Engineering. 1245 Waverley St.

B. S., University of Michigan, 1891. Assistant in Physics, University of Michigan, 1890-92; Instructor in Electrical Engineering, 1892-93; Professor of Physics, University of Colorado, 1893-95, Professor of Electrical Engineering, 1895-1903, Dean of Colorado School of Applied Sciences, 1901-03; Designing Engineer at General Electric Works, Schenectady, N. Y., 1899-1900.

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‡Resigned December, 1904.

KARL G. RENDTORFF, Assistant Professor of German.
1130 Bryant St.

A. M., Leland Stanford Jr. University, 1894, Ph. D., 1896. Student, University of Giessen, 1884-85, University of Kiel, 1885-91.

SAMUEL JACKSON BARNETT, Assistant Professor of Physics.
315 Lytton Ave.

A. B., University of Denver, 1894; Ph. D., Cornell University, 1898. Instructor in Physics and Biology, University of Denver, 1894-95; Assistant in Astronomical Observatory, University of Virginia, 1895-96, and Instructor in Astronomy, 1896; University Scholar and Fellow in Physics, Cornell University, 1896-98; Instructor and afterward Professor of Physics, Colorado College, 1898-1900.

CHARLES ROSS LEWERS, Assistant Professor of Law.
20 Lasuen St.

A. B., University of Nevada, 1893; A. B., Leland Stanford Jr. University, 1896; LL. B., Harvard University, 1899.

FREDERICK JOHN ROGERS, Assistant Professor of Physics.
4 Lasuen St.

M. S., Cornell University, 1891. Instructor in Physics, Cornell University, 1892-1900.

LILLIEN JANE MARTIN, Assistant Professor of Psychology.
15 Salvatierra St.

A. B., Vassar College, 1880. Teacher of Science, Indianapolis High School, 1880-89; Vice-Principal and Head of Department of Science, Girls' High School, San Francisco, 1889-94; Student, University of Göttingen, 1894-98.

CHARLES REYNOLDS BROWN, Lecturer on Ethics.
322 Twenty-second St., Oakland.

A. B., University of Iowa, 1883, A. M., 1886; S. T. B., Boston University School of Theology, 1889. Pastor, Wesley Chapel, Cincinnati, 1889-92; Pastor Winthrop Church, Boston, 1892-96; Student, Harvard University, 1893-94; Pastor, First Congregational Church, Oakland, since 1896.

HANS FREDERICK BLICHFELDT, Assistant Professor of Mathematics.
College Terrace.

A. B., Leland Stanford Jr. University, 1896; Ph. D., University of Leipzig, 1898.

COLBERT SEARLES, Assistant Professor of Romanic Languages.
1106 Bryant St.

A. B., Wesleyan University, 1895; Ph. D., University of Leipzig, 1899. Instructor in French and Italian, Indiana University, 1899-1900; Associate Professor of English and Modern Languages, University of Arkansas, 1900-01.

RAYMOND MACDONALD ALDEN, Assistant Professor of English Literature and Rhetoric. 455 University Ave.

A. B., University of Pennsylvania, 1894; A. M., Harvard University, 1896; Ph. D., University of Pennsylvania, 1898. Instructor in English, Columbian University, Washington, D. C., 1894-95; Assistant in English, Harvard University, 1896-97; Senior Fellow in English, University of Pennsylvania, 1898-99, Instructor, 1899-1901.

WILLIAM ALPHA COOPER, Assistant Professor of German.
1111 Emerson St.

A. B., Marietta College, 1892, A. M., 1897. Student, Universities of Bonn, Leipzig, and Paris, 1892-94; Instructor in German and French, Marietta College, 1895-99, Professor, 1899-1901.

†ANDREW ALLEN BROWNE, Assistant Professor of Mechanic Arts, and Superintendent of Shops.
[Tempe, Ariz.]

Student, University of Michigan, 1888-90; Teacher, Chicago English High and Manual Training School, 1890-97; Machinist Contractor, Monterey, Mexico, 1897-1900; with Mexican Lead Company, 1900-02.

‡THOMAS ANDREW STOREY, Assistant Professor of Hygiene. [Jamaica Plain, Mass.]

A. B., Leland Stanford Jr. University, 1896, A. M., 1900, Ph. D., 1902.

JEFFERSON ELMORE, Assistant Professor of Latin.
543 Middlefield Road.

A. B., Leland Stanford Jr. University, 1895, A. M., 1895, Ph. D., 1901. Principal of Merced County High School, 1895-97; Student, Universities of Bonn and Berlin, 1901-02.

JOHN OTTERBEIN SNYDER, Assistant Professor of Zoology.
627 Webster St.

A. B., Leland Stanford Jr. University, 1897, A. M., 1899.

ROBERT ECKLES SWAIN, Assistant Professor of Chemistry.
638 Channing Ave.

A. B., Leland Stanford Jr. University, 1899; M. S., Yale University, 1901, Ph. D., 1904.

DAVID SAMUEL SNEDDEN, Assistant Professor of Education. College Terrace.

A. B., St. Vincent's College, Los Angeles, 1890; A. B., Leland Stanford Jr. University, 1897; A. M., Columbia University, 1901. Principal of Schools, Santa Paula, Cal., 1892-93; Principal of High School, Paso Robles, Cal., 1897-1900.

HARRY ALVIN MILLIS, Assistant Professor of Economics.
461 Addison Ave.

A. B., Indiana University, 1895, A. M., 1896; Ph. D., University of Chicago, 1899. Reference Librarian, John Crerar Library, Chicago, 1899-1902; Professor of Economics and Sociology, University of Arkansas, 1902-03.

GEORGE LOFTUS NOYES, Assistant Professor of Drawing.
1200 Bryant St.

Art Student, Collorossi and Delacluse Académies, Paris, 1889-93; Exhibitor in Paris Salon, 1892, Society of American Artists, 1896, Boston Art Club, 1893-1902.

JAMES ROLLIN SLONAKER, Assistant Professor of Physiology. 334 Kingsley Ave.

B. S., University of Washington, 1893; Ph. D., Clark University, 1896. Fellow in Biology, Clark University, 1893-96; United States Fish Commissioner, Woods Holl, Mass., summer, 1895; Instructor in Zoology, Indiana University, 1896-99, Indiana University Biological Station, 1896-1900; Assistant Professor of Zoology, Indiana University, 1899-1901; Research Assistant in Neurology, University of Chicago, 1901-02, Associate in Neurology, 1902-03.

CARL COSMO RICE, Assistant Professor of Romanic Languages. 375 Everett Ave.

A. B., University of Texas, 1897, A. M., 1899; A. M., Harvard University, 1900, Ph. D., 1902. Tutor in Latin, University of Texas, 1897-99; Assistant Professor of Romanic Languages and Latin, University of Oregon, 1902-03.

†Absent on leave.

‡Absent on leave, 1904-05.

WILLIAM RANKINE ECKART, Assistant Professor of Mechanical Engineering. 1125 Ramona St.

M. E., Cornell University, 1895. Mechanical Engineer, Siemens Halske Electric Co., Chicago, 1895-96; Constructing Engineer, Allison Branch Mine, Grass Valley, Cal., 1896-98; Testing work for Fraser & Chalmers, in Hawaii and Mexico, 1898-99; with W. R. Eckart, Consulting Engineer, Hydraulic Power Plants and Mining Work, 1899-1903; Consulting Engineer, Geary-St. P. & O. R. R., San Francisco, 1902-04.

JACOB VOORSANGER, Lecturer on the Framework of the Old Testament. 1249 Franklin St., San Francisco.

Rabbi, Amsterdam, 1873; D. D., Cincinnati, 1894. Rabbi, Temple Emanu-El, San Francisco, since 1886; Professor of the Semitic Languages and Literature, University of California, since 1896.

WILLIAM CULLEN DENNIS, Assistant Professor of Law. 161 Encina Hall.

A. B., Earlham College, 1896; A. B., Harvard University, 1897, A. M., 1898, LL. B., 1901. Secretary Lake Mohonk Conference on International Arbitration, 1901-02; Instructor in Law, University of Illinois, 1902-03, Assistant Professor of Law, 1903-04.

HALCOTT CADWALADER MORENO, Assistant Professor of Applied Mathematics. 375 Everett Ave.

A. B., University of Georgia, 1893, A. M., 1894, B. L., 1896; Ph. D., Clark University, 1900. Tutor in Mathematics, University of Georgia, 1893-97; Scholar and Fellow in Mathematics, Clark University, 1897-1900; Assistant in Mathematics, Clark University, 1900-1901.

CLARA S. STOLTENBERG, Assistant Professor of Physiology. 7 Alvarado Row.

A. B., Leland Stanford Jr. University, 1896, A. M., 1897.

SAMUEL SWAYZE SEWARD, Jr., Assistant Professor of English. 1101 Cowper St.

A. B., Columbia College, 1896; A. M., Columbia University, 1897. Scholar in Literature, Columbia University, 1896-97, Assistant in Literature, 1897-99; Student, Oxford University, 1899-1900.

‡LUTHER BURBANK, Lecturer on Plant Evolution. Santa Rosa.

JOHN EZRA McDOWELL, Assistant Registrar. 20 Lasuen St.

A. B., Leland Stanford Jr. University, 1900.

JULIUS EMBRET PETERSON, Foreman of the Forge. 660 Homer Ave.

EUGENE SOULE, Foreman of the Manual Training Shop. 633 Lytton Ave.

EDWIN CHAPIN STARKS, Curator in Zoology. 1115 Ramona St.

Assistant in United States Bureau of Biological Survey, 1897-99; Curator of the Museum, University of Washington, 1899-1900.

‡For 1905-06.

LEE EMERSON BASSETT, Instructor in Elocution.
2 Salvatierra St.

A. B., Leland Stanford Jr. University, 1901. Graduate Cumnock School of Oratory, Los Angeles, 1898; Instructor in Public Speaking, University of Southern California, 1898-99; Instructor in Elocution, Long Beach, Cal., summer school, 1898; Student, School of Expression, Boston, 1901.

ALVIN JOSEPH COX, Instructor in Chemistry.
129 Emerson St.

A. B., Leland Stanford Jr. University, 1901, A. M., 1902; Ph. D., University of Breslau, 1904.

CHARLES FREDERICK SCHMULTZLER, Instructor in German. 219 Ramona St.

A. B., Leland Stanford Jr. University, 1898, A. M., 1899.

EDWARD KIRBY PUTNAM, Instructor in English.
19 Salvatierra St.

A. B., Illinois College, 1891; A. M., Harvard University. 1899. Student, University of Chicago, 1894-96.

BENJAMIN OLIVER FOSTER, Instructor in Latin.
233 Addison Ave.

A. B., Leland Stanford Jr. University, 1895; A. M., Harvard University, 1897, Ph. D., 1899. Parker Fellow of Harvard University, studying in the American School of Classical Studies in Rome, 1899-1900; Acting Professor of Latin and Greek, State Normal College of Michigan, 1900-01.

ALBERT CONSER WHITAKER, Instructor in Economics.
9 Alvarado Row.

A. B., Leland Stanford Jr. University, 1899; Ph. D., Columbia University, 1904. Scholar in Economics, Columbia University, 1899-1900, Fellow, 1900-01; Student, University of Berlin, 1901-02.

EDWARD JOHN STANLEY, Instructor in Pattern Making and Foundry Work. 202 Bryant St.

Machinist with Pacific Iron Works, San Francisco, 1878-79, Pattern Maker, 1880-86. Foreman, Pattern Shop, Union Iron Works, San Francisco, 1886-1901.

JOSEPH GRANT BROWN, Instructor in Physics.
411 Lytton Ave.

A. B., Leland Stanford Jr. University, 1901, A. M., 1903.

ANSTRUTHER ABERCROMBIE LAWSON, Instructor in Botany. 17 Salvatierra St.

B. S., University of California, 1897, M. S., 1898; Ph. D., University of Chicago, 1901. Fellow in Botany, University of Chicago, 1900-01.

ERNEST WHITNEY MARTIN, Instructor in Latin and Greek.
727 Cowper St.

A. B., University of Chicago, 1900; A. M., Leland Stanford Jr. University, 1902. Instructor in Latin and Greek, Private School, Clarinda, Ia., 1895-96; Principal of High School, 1896-98; Student University of Berlin, and American School of Classical Studies, Rome, 1900-01.

ROBERT EVANS SNODGRASS, Instructor in Entomology.
160 Encina Hall.

A. B., Leland Stanford Jr. University, 1901. Assistant Entomologist, Washington State Agricultural College, and Experiment Station, 1901-03.

HALBERT WILLIAM CHAPPELL, Instructor in Hygiene
7 Salvatierra St.

A. B., Leland Stanford Jr. University, 1901, LL. B., 1903.

JAMES BENNETT LIGGETT, Foreman of the Foundry.
424 Lytton Ave.

Apprentice and Foundry Moulder, Falls Rivet and Machine Co., Cuyahoga Falls, O., 1883-88, Webster, Camp & Lane, Akron, O., 1888-93, Bowler & Co., Cleveland, O., 1893-98; Foundry Foreman, City Foundry Co., Cleveland, O., 1898-99; Foreman, Born Steel Range Co., Cleveland, O., 1899-1902; Foreman of Foundry, Westinghouse Electric Co., Cleveland, O., 1902.

DORSEY ALFRED LYON, Instructor in Metallurgy.
College Terrace.

A. B., Leland Stanford Jr. University, 1898; A. M., Harvard University, 1902. Assistant in Chemistry, Leland Stanford Jr. University, 1897-98; Instructor in Geology, University of Washington, 1898-99, Assistant Professor of Mining and Metallurgy, 1899-1900; Professor of Mining and Metallurgy and Dean of the School of Mines, 1900-01; Graduate Student, Harvard University, 1901-02; with United States Smelting Co., Utah, 1902.

†WILLIAM ALBERT MANNING, Instructor in Mathematics.
[In Europe.]

A. B., Willamette University, 1900; A. M., Leland Stanford Jr. University, 1902, Ph. D., 1904.

HENRY LEWIN CANNON, Instructor in History.
219 Addison Ave.

A. B., Western Reserve University, 1893; Ph. D., University of Pennsylvania, 1898. Student, Harvard University, 1893-94, Yale University, 1896-97; Fellow in European History, University of Pennsylvania, 1897-98; Instructor in History, University of Cincinnati, 1900-03.

†ANTHONY HENRY SUZZALLO, Instructor in Education.
[New York City.]

A. B., Leland Stanford Jr. University, 1899; A. M., Columbia University, 1902. Principal of Schools, Alviso, Cal., 1896-97; Principal, Longfellow Grammar School, Alameda, Cal., 1899-1901; Instructor, San Francisco State Normal School, 1902-03.

CHLOE LESLEY STARKS, Instructor in Drawing.
1115 Ramona St.

KENNETH LIVERMORE CURTIS, Instructor in Electrical Engineering.
162 Encina Hall.

B. S., University of Colorado, 1901. With General Electric Co., Schenectady, N. Y., 1901-03.

ARTHUR MARTIN CATHCART, Instructor in Law.
334 Lincoln Ave.

A. B., Leland Stanford Jr. University, 1896.

†Absent on leave, 1904-05.

GEORGE IRVING GAVETT, Instructor in Applied Mathematics. College Terrace.

B. S., University of Michigan, 1893. Sub-Inspector, U. S. Deep Water Channel between Duluth, Chicago and Buffalo, 1893-94; Teacher of Mathematics and Science, Spring Arbor (Mich.) Seminary, and of Mechanical Drawing in Y. M. C. A. classes, Jackson, Mich., 1897-99; Professor of Mathematics and Engineering, Fairmount College, 1899-1904.

PEHR HJALMAR OLSSON-SEFFER, Instructor in Systematic Botany. College Terrace.

Graduate, University of Helsingfors, 1892; Ph. D., Leland Stanford Jr. University, 1904. Fellow in Botany, University of Helsingfors, 1893-95; Assistant in Biology, Normal College, Helsingfors, 1895; Instructor in Swedish, Mariehanm College, 1896; Student, Universities of Upsala, Helsingfors and Dorpat, 1897-98; Instructor in Botany, Helsingfors College, 1899; Chemist to Maryborough Sugar Factory, Australia, 1901; Advisory Work for Department of Lands, Queensland and Western Australia, 1900-02.

RUBY GREEN BELL, Instructor in Entomology. 5 Lasuen St.

A. B., Leland Stanford Jr. University, 1902, A. M., 1904.

STANLEY SMITH, Instructor in Romanic Languages. Redwood City.

A. B., Leland Stanford Jr. University, 1903.

HOWARD JUDSON HALL, Instructor in English. 318 Lincoln Ave.

B. S., Michigan State Agricultural College, 1890; A. B., Leland Stanford Jr. University, 1896; A. M., Harvard University, 1900. Professor of English and Librarian, University of Arizona, 1891-1904.

JOHN KESTER BONNELL, Instructor in English. 370 Addison Ave.

A. B., Leland Stanford Jr. University, 1903. San Francisco Harvard Club Fellow at Harvard University, 1903-04.

FRANCIS HARDING WHITE, Instructor in English. 381 Lincoln Ave.

A. B., Princeton University, 1887, A. M., 1890; A. M., Harvard University, 1898. Boudinot Fellow in History, Princeton University, 1887-88; Instructor and afterward Professor of History and Political Science, Kansas State Agricultural College, 1888-97; Assistant in History, Harvard University, 1897-98; Instructor in History, Wellesley College, 1898-99; General Secretary, Brooklyn Children's Aid Society, 1899-1903; Instructor in English and History, Redlands (Cal.) High School, 1903-04.

‡HENRY WINTHROP BALLANTINE, Instructor in Law. [San Francisco]

A. B., Harvard University, 1900, LL. B., 1904.

THEODORE PALMATEER, Acting Foreman of the Machine Shop. San Jose.

‡Beginning August, 1905.

GALEN HOWARD CLEVENGER, Acting Instructor in Metallurgy. 523 Cowper St.
B. S., South Dakota School of Mines, 1901; A. M., Columbia University, 1903.

ASSISTANTS

German

HELENE MAY NYE. 515 Waverley St.
Ph. B., Marietta College, 1902.

Education

WILLIAM WEBB KEMP. 832 Kipling St.
A. B., Leland Stanford Jr. University, 1898. Teacher of History, Hoitt's School, Menlo Park, 1898-1902. Principal, Longfellow Grammar School, Alameda, 1902-04.

EDWIN REAGAN SNYDER.
375 E. San Fernando St., San Jose.

CECILIA FREEMAN ATHERTON. 11 Roble Hall.
A. B., Leland Stanford Jr. University, 1904.

Applied Mathematics

GEORGE DE FOREST BARNETT. 6 Lasuen St.
LAWRENCE EDMINSTER CUTTER. Mountain View.

Physics

GRACE NIMS BROWN. 411 Lytton Ave.
A. B., Leland Stanford Jr. University, 1902.

EDWARD JAY NASH. 533 Ramona St.
CLARENCE KNIGHT STUDLEY. 194 Encina Hall.
A. B., Leland Stanford Jr. University, 1905.

Chemistry

WILLIAM EDMUND BURKE. 603 Lytton Ave.
CARLTON CHENEY JAMES. 431 Kipling St.
A. B., Leland Stanford Jr. University, 1905.

JENNIE ALICE COMINGS. 53 Roble Hall.
WILLIAM ELMER CRAWFORD. 172 Encina Hall.
NORMAN ELIOT DOLE. 11 Lasuen St.
A. B., Leland Stanford Jr. University, 1904.

FRED FINLEY FITZGERALD. 667 University Ave.
RALPH HARRISON SHERRY. 10 Lasuen St.
A. B., Leland Stanford Jr. University, 1904.

HARRY DRAKE GIBBS, Research Assistant.
2 Salvatierra St.
B. S., Cornell University, 1894.

Systematic Botany

LINDEL MARGARET HOSKINS. 845 Waverley St.

Physiology and Histology

JOHN FRANCIS COWAN. 10 Lasuen St.
A. B., Leland Stanford Jr. University, 1902.

MICHITARO SINDO. Encina Hall.

Hygiene and Physical Training

CHARLES L. DUNCAN. 29 Encina Hall.
A. B., Leland Stanford Jr. University, 1904.

OSWALD SWINNEY LOUSLEY. Encina Gymnasium.

FLORENCE BOLTON. 19 Lasuen St.

MARY ROSALIE STOLZ. 29 Roble Hall.

VERA TOWNSEND. 414 Bryant St.
A. B., Leland Stanford Jr. University, 1901.

Zoology

WALTER KENRICK FISHER. 821 Waverley St.
A. B., Leland Stanford Jr. University, 1901, A. M., 1903.

MILO HERRICK SPAULDING. 339 Kipling St.
A. B., Leland Stanford Jr. University, 1893.

MARY RUHAMA CRAVENS 45 Roble Hall
A. B., Leland Stanford Jr. University, 1904.

Entomology and Bionomics

MARY ISABEL McCRACKEN. 10 Salvatierra St.
A. B., Leland Stanford Jr. University, 1904.

Metallurgy

PERCY McCHESNEY GRISWOLD. College Terrace.

Civil Engineering

JOHN FLETCHER BYXBEE, JR. 347 Alma St.
A. B., Leland Stanford Jr. University, 1902.

GEORGE ASHMUN HODGE. 6 Lasuen St.

LOUIS JOHN MAYREIS. 151 Encina Hall.

Mechanical Engineering

ROBERT HUGHES GAITHER. Evergreen Park.

Electrical Engineering

JOSEPH MINI, JR. 70 Encina Hall.

President's Office

DAVID TIMMINS FULLAWAY, Stenographer. 667 University Ave.
RALPH LESLIE MOTZ. University Inn.
THOMAS EDGAR ROBINSON. 1035 Bryant St.

Registrar's Office

SUSAN BROWN BRISTOL, Secretary in charge of Recommendation of Teachers. 1 Salvatierra St.
A. B., Leland Stanford Jr. University, 1897.

WILLIAM CHRISTIAN THEILE, Stenographer. 25 Encina Hall.

University Library

FLORENCE HUGHES, Head Cataloguer. 1248 Waverly St.
LILLIAN PEARLE GREEN, Reference Librarian. 5 Lasuen St.
A. B., Leland Stanford Jr. University, 1898.

ALICE NEWMAN HAYS, Classifier. 11 Salvatierra St.
A. B., Leland Stanford Jr. University, 1896.

MARTHA ELIZABETH HAVEN, Supervisor Accessions. 5 Lausen St.
A. B., Leland Stanford Jr. University, 1896.

HARRIETTE MILES, Supervisor Department of Serials. 1116 Ramona St.

BELLE HEBER THOMPSON, Chief Loan Desk Assistant. 909 Alma St.
ELIZABETH HADDEN, Cataloguer. 1157 Ramona St.
HELEN B. SUTLIFF, Cataloguer. 1116 Ramona St.
GEORGE GUSTAV ALTNOW. 183 Encina Hall.
MILDRED IRENE CROSIER. 16 Alvarado Row.
BENJAMIN CLIFFORD DEY. 14 Lasuen St.
PAUL CARROLL EDWARDS. 13 Salvatierra St.
RUTH HUGHES GILBERT. 433 Melville Ave.
ANNA GERTRUDE HALL. 68 Roble Hall.
FREDERIC RODGERS LANAGAN. 9A Salvatierra St.
CARL AUGUSTUS LANTZ. 327 Emerson St.
HERBERT HARRIS McLEAN. 8 Salvatierra St.
PAUL EDWARD MILLAR. 94 Encina Hall.
LETITIA PATTERSON. 431 University Ave.
A. B., Leland Stanford Jr. University, 1901.

HELEN WATERMAN ROLFE. 909 Alma St.
JOHN ELMER STEWART. 118 Encina Hall.

Law Library

WILLIAM ELBRIDGE BILLINGS. College Terrace.
A. B., Leland Stanford Jr. University, 1903.

EMMET CLOYD RITTENHOUSE. 53 Encina Hall.
A. B., Leland Stanford Jr. University, 1904.

OMAR CORWIN SPENCER. 9 Encina Hall.

Memorial Church

BENJAMIN COLMAN BLODGETT, Organist.
251 Emerson St.

Mus. Doc. Oxon., 1877. Student, University and Conservatory of Music, Leipzig, 1858-61; Principal of Music School, Pittsfield, Mass., 1865-78; Director of Music, Smith College, 1878-1903; Honorary Fellow, London Society of Arts and Letters, 1880; Member, Wagner Musik-Verein, Bayreuth, 1883, New York Art Club, 1890.

Leland Stanford Junior Museum

HARRY C. PETERSON, Curator. 672 Homer Ave.

Roble Hall

HARRIET STRINGER BLYNN, Matron. Roble Hall.

BUSINESS OFFICE

CHARLES GARDNER LATHROP, Treasurer and Business Manager. Alta Vista

PRICE, WATERHOUSE & CO., Auditors.
Mills Building, San Francisco.

A. C. LASSEN, Cashier. Encina Hall.

SAMUEL H. RICH, Bookkeeper and Voucher Clerk.
1158 Ellis St., San Francisco.

CHARLES FREDERICK WRIGHT, Bookkeeper.
College Terrace.

A. B., Leland Stanford Jr. University, 1896, A. M., 1897.

FANNIE HADDEN, Stenographer. 1157 Ramona St.

PHILIP QUINN ATKINSON, Peace Officer.
Stanford University.

CHARLES EDWARD HODGES, Resident Architect.
Pine Cottage.

With N. S. Joseph & Pearson, Architects, London, 1884-88; Student, Westminster and South Kensington Architect Schools, 1884-88; Draughtsman to Shepley, Rutan & Coolidge, Architects, 1888-91; Member, American Institute of Architects, Washington, D. C., September, 1900.

CHARLES TROWBRIDGE, Draughtsman to the Architect.
San Jose.

C. P. HUGHES, Chief Engineer. Stanford University.

DAVID H. HOLMES, Chief Electrician.
Stanford University.

GEORGE ADDERSON, Overseer of Buildings. Encina Hall.

WALTER UHLMAN, Custodian of the Mechanical Laboratory.
420 Emerson St.

WILLIAM WHEELER HENLEY, Laboratory Mechanician.
College Terrace.

T. B. SCOTT, Storekeeper of the Chemical Laboratory.
Mayfield.

M. H. DORGAN, Chief Plumber. Mayfield.

CHARLES F. MOORE, Plumber. Menlo Park.

CHARLES C. WALLEY, Chief Carpenter. Mayfield.

CHARLES F. MILLER, Chief Gardener. 415 Lytton Ave.

JEREMIAH CROWLEY, Foreman of the Farm. Mayfield.

ORGANIZATION

Foundation

The founding, at Palo Alto, of "a university for both sexes, with the colleges, schools, seminaries of learning, mechanical institutes, museums, galleries of art, and all other things necessary and appropriate to a university of high degree," was determined upon by the Hon. Leland Stanford and Jane Lathrop Stanford, in 1884. In March of the year following the Legislature of California passed an Act providing for the administration of trust funds in connection with institutions of learning. November 14, 1885, the Grant of Endowment was publicly made in accordance with this Act, and on the same day the Board of Trustees held its first meeting, in San Francisco. The work of construction was at once begun, and the cornerstone laid May 14, 1887, the nineteenth anniversary of the birth of Leland Stanford, Junior. The University was formally opened to students October 1, 1891.

Name and Purpose

"Since the idea of establishing an institution of this kind, for the benefit of mankind, came directly and largely from our son and only child, Leland, and in the belief that had he been spared to advise as to the disposition of our estate, he would have desired the devotion of a large portion thereof to this purpose, we will that for all time to come the institution hereby founded shall bear his name, and shall be known as The Leland Stanford Junior University."

The object of the University is "to qualify students for personal success and direct usefulness in life"; its purposes, "to promote the public welfare by exercising an influence in behalf of humanity and civilization, teaching the blessings of liberty regulated by law, and inculcating love and reverence for the great principles of government as derived from the inalienable rights of man to life, liberty, and the pursuit of happiness."

Location

The University is located on the Palo Alto estate in the Santa Clara Valley, thirty-three miles southeast of San Francisco, on the Coast Division of the Southern Pacific Railway. The estate consists of about nine thousand acres, partly level and partly rising into the foothills of the Santa Cruz Range. On the grounds are the residence of the founders and an extensive arboretum containing a great variety of shrubs and trees. The Bay of San Francisco lies about three miles east of the University buildings, and across the bay the Monte Diablo Range rises to the height of over four thousand feet. The Lick Observatory, crowning Mount Hamilton, the highest of the range, is plainly visible. To the southwest, between the valley and the ocean, is the heavily wooded Santa Cruz Range, two thousand to four thousand feet in height.

The Santa Clara Valley is one of the most attractive portions of the State in climate, in natural beauty, and in the fertility and adaptiveness of its soil to all the varied fruits of California. The characteristics of the climate are its evenness of temperature, its pure and bracing air, and its freedom alike from the fogs and harsh winds of the coast and from the oppressive summer heat of the interior valleys. In winter the mercury rarely falls below 30 degrees, and the average midday temperature is about 55 degrees; in summer the average midday temperature is between 70 degrees and 80 degrees, while the nights are always cool. The rainfall, of about fifteen inches, is chiefly confined to the months from December to April, inclusive.

Endowment

The landed endowment of the University, in addition to the Palo Alto estate, consists of the Vina tract, in Tehama County, of fifty-three thousand acres; the Gridley tract, in Butte County, of eighteen thousand acres; various tracts of minor importance; and the Stanford residence in San Francisco. The main part of the University endowment, the gift of Mrs. Stanford, consists of interest-bearing securities.

Buildings

The central group of buildings, constituting two quadrangles, the one surrounding the other, is an adaptation of the Mission Architecture and reproduces on an imposing scale the open

arches, long colonnades, and red tile roofing of the old Spanish Missions of California. The INNER QUADRANGLE, with its twelve one-story buildings and Memorial Church connected by a continuous open arcade, faces a court 586 feet long by 246 feet wide, or three and a quarter acres. The buildings are of buff sandstone, somewhat varied in color, the stonework of broken ashlar, with rough rock face, and the roofs covered with red tile.

The fourteen buildings of the OUTER QUADRANGLE are constructed of the same material and in the same general style as the inner quadrangle. They are also connected on the outer side by open arcades extending entirely around the quadrangle. The extreme length of the outer quadrangle is 894 feet.

The MEMORIAL ARCH, forming the central feature of the principal façade of the University, is 100 feet in height, 90 feet wide, and 34 feet in depth. The archway is 44 feet wide and 51 feet high. A sculptured frieze twelve feet in height, and representing the "Progress of Civilization in America," surrounds the arch. Above this frieze is a corbelled arch course terminating in the parapet wall four feet above the flat fireproof roof. A circular iron stairway leads from the ground level to the roof.

The ASSEMBLY HALL, the first building east of the Memorial Arch, has a frontage of 108 feet, and a seating capacity of seventeen hundred. The stage is 36 x 28 feet, with two dressing-rooms on each side. The stage and auditorium are lighted by two large ornamental dome skylights.

The Thomas Welton Stanford LIBRARY BUILDING occupies the central portion of the eastern half of the façade in the outer quadrangle. It has a frontage of one hundred and sixty feet, and the extreme width, including ell, is one hundred and fifty-eight feet. The stack room, which forms the ell, is 70 x 74 feet. The main reading-room, lighted by a circular dome of stained glass forty feet in diameter, has a seating capacity of two hundred and twenty. On the first floor are also the cataloguing-room, reference libraries, and offices; on the second floor are six seminary rooms.

A new LIBRARY BUILDING, situated between the Quadrangles and the Gymnasium, and directly opposite the Chemistry Building, was begun in 1904. The ground dimensions are 304 feet in length, with a width, through the stack room, of 200 feet. The semi-circular stack room has a diameter of 132 feet. In height the building will be three stories and basement, surmounted by

a glass dome 74 feet in diameter, the total height from the ground line to the top of the dome being 141 feet. Entrances at each end of the building will lead into the first floor. In the wings of this floor will be rooms for the librarian, for accessioning and cataloguing, general reference and periodical rooms; while in the central portion, directly beneath the great dome, will be located the general reading and study room, which will be circular in form. Directly back of this, in the semi-circular addition, will be the great stack room, the stacks radiating away from the delivery desk. The second floor will be devoted to seminary rooms and special libraries belonging to the various departments.

The Leland Stanford Junior Museum, a concrete building, 540 x 156 feet, including wings, is situated a quarter of a mile from the quadrangles, and on the west side of the Palo Alto Avenue. The museum contains the archæological and art collections of the University. Extensive additions to the Museum are in process of construction.

The Chemistry building is located between the quadrangles and the Museum. It consists of two separate structures—the main Chemistry building and the Assaying Laboratory. The main building is 235 feet in length and 100 feet in width at the wings, and consists of two stories with basement and attic. The Assaying Laboratory is a one-story building, 115 x 30 feet, in the rear of the main building, and separated from it by an inclosed court.

Behind the central quadrangles are located the workshops of the engineering departments, experimental laboratories, power-houses, etc.

The dormitories are east and west of the quadrangles. Encina Hall, for young men, is at the east, and occupies a ground area of 312 x 150 feet. It is four stories high, built of the same material as the quadrangle, and decorated with end arcades, a central arched porch, and mosaic work. It is provided with electric lights, hot and cold water, steam heat, suitable furniture, bathrooms on each floor, and has accommodations for three hundred students. Roble Hall, for young women, is at the west. It is of concrete, is about a third the size of Encina Hall, and will accommodate one hundred students. Madrono Hall is a frame building, at present leased to private parties, but receiving only women students. It will accommodate about thirty students.

Encina Gymnasium and Roble Gymnasium are substantial

frame buildings, equipped with the necessary apparatus and appliances for physical training. A new Gymnasium for men, to be constructed of stone and equipped with all modern conveniences and appliances, was begun in 1902.

The University Inn is a frame building, just east of the quadrangles. It is intended primarily as a University commons for students living on the campus.

The grounds immediately about the University have been reserved, in part for experimental and ornamental purposes, and in part as residence sites for members of the Faculty and others who may desire to live on the University campus. Over fifty cottages have been erected.

Scientific Collections

It is intended to bring together in the museums of the University a full representation of the natural history and mineral products of California, collections of all books, pamphlets, photographs, and maps bearing upon the early history of the West, and full collections of Indian antiquities and illustrations of aboriginal life. It is desired to receive donations from all persons who are interested in the work and who have material of value to the museums. Collections sent in this way will be carefully labeled and preserved, and the name of the donor will be kept on record. Messrs. Wells, Fargo & Co. will transport such gifts to the University free of charge, in shipments of fifty pounds or less, from railroad points in California, Oregon, and Nevada.

Trustees

The general management and control of the institution is vested in a board of trustees originally numbering twenty-four and chosen for life. By a modification of the charter, effected in 1899, the number of trustees was reduced to fifteen, with future appointments for a term of ten years. The charter provided that the founders, during their lives, shall "perform all the duties and exercise all the powers and privileges enjoined upon and vested in the trustees." An Act of the Legislature, passed March, 1903, authorized the surviving founder to turn over to the trustees during her life-time the full management and control of the University, and this transfer was duly made June 1, 1903.

The University Faculty

The power and authority of the University Faculty is vested in the Academic Council, consisting of the President of the University, the professors and associate professors, the librarian, the registrar, such assistant professors as have been upon the roll of the faculty for three years, whether as assistant professors or instructors, and such other officers of the University or members of the teaching staff as the Academic Council may, with the assent of the Board of Trustees, determine.

All general University regulations, statutes, and rules as to matters within the province of the faculty, must be initiated in and passed by the Academic Council. The Academic Council has general power and responsibility for the internal administration of the University, subject to express provisions contained in the Articles of Organization respecting the methods of exercising such powers through the President of the University, the Advisory Board, the Standing Committees, and the Department Faculties.

The Advisory Board consists of nine members of the rank of professor, one from each of the five department groups, and four chosen without reference to groups. All executive acts of general importance, such as recommendations for appointments, promotions, and dismissals, for the creation of new departments or chairs, etc., must be submitted by the President to the Advisory Board. The Advisory Board is also privileged to make such recommendations to the President, regarding policy, as it may decide by vote to be expedient, but no recommendations for appointments, promotions, or dismissals, may originate with the Advisory Board.

The Executive Committee of the Academic Council consists of the President, Vice-President, Registrar, and two members from each department group elected by the Academic Council. The Executive Committee appoints the Academic Committees of the Council and formulates the duties and controls the policy of Administrative and Academic Committees.

The Standing Administrative Committees of the Council are appointed by the President subject to the approval of the Advisory Board.

The Department Faculties consist of the professors, associate professors, assistant professors, and instructors in the several departments, but only members of the Academic Council have the

right to vote. A Department Faculty has direction of the work of instruction in the department and of the internal administration of the department, subject only to such control as is vested in the Board of Trustees, the President of the University, or the Academic Council. The Executive Head of the Department Faculty is designated by the President with the approval of the Advisory Board and of the Board of Trustees.

Departments

The work of the University embraces the following departments, divided into groups for the purpose of elections to the Advisory Board and Executive Committee, as indicated:

(1) Greek, Latin, Germanic Languages, Romanic Languages, English Literature and Rhetoric, English Philology; (2) Botany, Systematic Botany and Forestry, Physiology and Histology, Hygiene, Entomology and Bionomics, Geology and Mining; (3) Psychology, Mathematics, Physics, Chemistry; (4) Philosophy, Education, History, Economics and Social Science, Law; (5) Drawing, Applied Mathematics, Civil Engineering, Mechanical Engineering, Electrical Engineering.

Conduct of Students

In the government of the University the largest liberty consistent with good work and good order is allowed. Students are expected to show both within and without the University such respect for order, morality, personal honor, and the rights of others as is demanded of good citizens. Failure to do this will be sufficient cause for removal from the University.

The primary purpose of the University, as set forth by its founders, is to train young men and young women "for personal success and direct usefulness in life." "Success" and "usefulness," as here understood, involve character and effectiveness; and the resources of the University are directed toward the development of these qualities, so that every graduate may be prepared to do some useful thing honestly and effectively. Each student, therefore, is expected and encouraged to work toward some definite end in the choice of his studies. Students unable or unwilling to do serious work, looking toward a definite end, are not welcomed and will not be retained in the University.

Student Organizations

The general direction of student interests, including athletics, musical organizations, intercollegiate debating, etc., is intrusted to the Associated Students. Numerous general student organizations have been formed for mutual assistance and improvement in various lines. The Young Men's Christian Association and the Young Women's Christian Association hold devotional meetings and carry on courses of Bible Study throughout the year. During the opening week of the first semester the Associations maintain an Information Bureau for the accommodation of new students. In conjunction with the Faculty Committee on Public Health, the Associations compile each year a list of rooming and boarding-houses which have been inspected and approved; they also manage the Student Employment Bureau. Two college journals, the *Daily Palo Alto* and *Sequoia,* are published by the Associated Students. The *Chaparral* is published twice a month, under the auspices of the Press Association. The *Quad* is an annual, published by the Junior Class. The *Alumnus* is published monthly by the Alumni Association.

The Hopkins Laboratory

The Hopkins Laboratory of Natural History, located at Pacific Grove, on the Bay of Monterey, is a branch of the biological work of the University.

ADMISSION TO THE UNIVERSITY

I. TO UNDERGRADUATE STANDING

Candidates must be at least *sixteen* years of age. They must present certificates of good moral character, and if from other colleges or universities, must bring letters of honorable dismissal.

Preparation for undergraduate standing implies the completion of a full four years' high school course, or its equivalent.

Fifteen credits are required for admission in full undergraduate standing, each credit representing one full year's work in the high school, with daily recitations, two laboratory periods being regarded as the equivalent of one recitation period. These fifteen credits may be made up of English composition (two credits) and such other subjects (aggregating thirteen credits) as may be selected by the candidate from the list given below, except that subject 23 may not be offered with either subject 10 or subject 11.

Entrance Subjects

1. English Composition (2)
2. Elementary Algebra (1½)
3. Plane Geometry (1)
4. Solid Geometry (½)
5. Trigonometry (½)
6. Adv. Algebra (½, 1,1½)
7. Physics (1)
8. Chemistry (1)
9. Physiology (1)
10. Botany (1)
11. Zoology (1)
12. Freehand Drawing (1)
13. Ancient History (1)
14. Mediæval and Modern History (1)
15. English History (1)
16. American History (1)
17. English Literature (1, 2)
18. Spanish (2, 3)
19. French (2, 3)
20. German (2, 3, 4)
21. Latin (2, 3, 4)
22. Greek (2, 3)
23. Biology (1)
24. Physiography (1)
25. Mechanical Drawing (1)
26. Woodworking (½)
27. Forge Work (½)
28. Foundry Work (½)
29. Machine Shop Work (1)

Twelve credits are accepted for admission in partial standing; except that on account of the limitation upon the number of women students, women are not received in partial standing.

Entrance credits may be obtained (A) on examination at the University (see pp. 52-53), or (B) wholly or in part without examination (see pp. 53-55).

The following will indicate the preparation necessary in the various subjects:

1. English Composition

The ability to write exercises not only free from marked deficiencies in spelling, punctuation, sentence structure, and paragraphing, but also proving the candidate's ability to think consecutively on a simple subject. Such subjects, as set at the time of the examination, will be drawn for the most part from the candidate's own experiences.

The work in English composition should be given at least two recitations a week throughout the entire high school course. The greater part of this time should be devoted to practice in writing, but it is recommended that some attention be also paid to instruction in the fundamental principles of formal rhetoric.

(2 credits)

[A candidate admitted to the University in regular standing without fulfilling the requirement in English Composition will be given an opportunity at the end of his first semester to make good his deficiency. Failing to pass this examination, he will be required to enter at once a special class in English Composition and to remain in it until his work is judged to be of passing grade.]

[Concerning time of examinations, see p. 53; substitute for examination, p. 55; exemption from examination, p. 53. B, I.]

2. Elementary Algebra

Algebra through quadratic equations: including the fundamental laws, the laws of exponents for positive and negative integers, formulas of multiplication, the binomial theorem for a positive integral exponent, the transformation of fractions, factoring, common divisors and multiples, radicals, simultaneous equations of the first degree, quadratic equations, the formation of equations with given roots, theory of quadratic equations, and the solution of problems involving the various classes of equations.

Emphasis should be placed upon the methods of factoring, and the solution of equations. Facility and accuracy in the manipulation of algebraic expressions should be attained, as well as an understanding of the meaning of the various operations. The solution of a large number of moderately difficult problems is preferable to the solution of a smaller number of more difficult ones; while the frequent use of problems involving literal expressions serves to impress upon the pupil the generality of algebraic results. (1½ credits)

3. Plane Geometry

In the teaching of geometry stress should be placed upon accuracy of statement as well as upon strict reasoning. This end may be promoted by requiring original propositions to be written out in full in a neat and accurate manner. Emphasis should be placed upon clear thinking rather than upon the acquirement of geometrical knowledge.

The requirement in plane geometry includes problems in mensuration of plane figures and original propositions, as well as the usual demonstrated theorems. The following topics are included: the general properties of plane figures; the circle, and the measure of angles; areas; regular polygons, and the measure of the circle. (1 credit)

4. Solid Geometry

The topics included are: relations of lines and planes to space; the properties of prisms, pyramids, cylinders, and cones; the sphere and spherical triangle; also the mensuration of solids, and original propositions. (½ credit)

5. Trigonometry.

This subject includes the general formulas of plane trigonometry; the theory of logarithms and the use of logarithmic tables; applications to the numerical solution of triangles and of simple problems in heights and distances. (½ credit)

6. Advanced Algebra

a. Simultaneous quadratic equations and equations solved like quadratics; fractional indices; fractional and irrational equations; the extraction of roots of polynomials; arithmetic, geometric, and harmonic series; permutations and combinations. (½ credit)

b. An additional credit or half credit may be given in Advanced Algebra for a suitable amount of work upon a connected group of the topics usually included under the heading of advanced or higher algebra. (½ to 1 credit)

7. Physics

The equivalent of one year's work in the high school, including both laboratory and text-book work. It is preferred that at least one-half the time be given to laboratory work in which the students perform individually such experiments as are described in the better class of laboratory manuals, of which Hall and Bergen's Physics may be named as an example. Accurate notes of the laboratory work should be kept. The text-book study should cover the ground of some modern text, of which Crew's Physics is a good example.

The desired preparation, both in laboratory and text-book work, is fairly represented by Sanford's Elements of Physics. (1 credit)

8. Chemistry

Beside the usual text-book and recitation work, each student must have a laboratory course in which he performs the experiments for himself. Accurate notes of the laboratory work should be kept. The necessary amount of laboratory work cannot be obtained in less than four hours per week for one school year, in addition to the classroom work. It is preferred that the laboratory work be entirely devoted to illustration of the important facts and principles of general chemistry, rather than partly to analytical chemistry. (1 credit)

Students who receive entrance credits on recommendation, and who wish to continue the study of chemistry in the University, will be admitted at once to the second half of course *a*, and will be required to begin course 1.

9. Physiology

The elements of human physiology and hygiene, the equivalent of Martin's Human Body. The text-book work should be accompanied by experiment, dissection of animals and organs, and a certain amount of study of the tissues with the microscope.

Candidates who have taken only the work in elementary physiology and hygiene done in the grammar or intermediate grades are not prepared to offer the subject for entrance credit. The elementary physiology and hygiene of the grammar grades,

in this regard, is in the same category as are the other subjects studied in the grammar grades, such as arithmetic and geography, which are assumed as preliminary to the subjects offered for entrance. (1 credit)

10. Botany

The requirements outlined by the College Entrance Examination Board (based on the report of the Committee on Botany of the Science Department of the National Educational Association, modified by a committee of the Society for Plant Morphology and Physiology) may be taken to represent approximately what is expected of the candidate for entrance credit in Botany. These requirements call for a full year's work, of which it is expected that at least two-thirds shall be genuine laboratory work. One-half of the year is to be devoted to the general principles of morphology, physiology, and ecology. In this work proper account should be taken of the lower plants as well as of the flowering plants. The second half-year is devoted to a study of the natural history of representatives of the larger groups of plants, and the principles of classification. This study is expected to include representatives of the algæ, fungi, mosses, ferns, and the principal types of flowering plants. If it seems desirable, the order of the two half-years' work may be reversed or combined in a different way. (Stevens's Introduction to Botany (Heath & Co., 1902) may be mentioned as indicating the scope of the work.)

In preparing to meet the requirements in botany, the main thing to be had in mind is that the work shall be of a practical nature; that is, that the study be done mainly from specimens and not from books. It must be borne in mind that botany is a department of biology, and means something more than the mere collecting and naming of specimens. A study of the growth and development of the forms selected is of the highest importance, and, so far as possible, should be made a prominent feature in the work.

If possible, the student should be allowed the use of a compound microscope; but when this is not practicable, microscopic demonstrations by the instructor are indispensable. The laboratory work of the students may be supplemented by such explanatory and text-book work as may be deemed necessary; but this must be understood to supplement and not to replace the laboratory work.

Notes and drawings should be neatly made in blank-books of moderate size. The paper for the drawings should be white, unruled, hard, smooth but not glazed. A hard pencil should be used in drawing, and accuracy and neatness are both to be emphasized. The descriptive notes should not be written upon the same sheets as the drawings, and should be clear and concise, including only what the student has himself seen. Notes taken from lectures or reading should be kept entirely apart from the student's own observations.

No credit will be given for an herbarium. The time necessary to prepare an herbarium may be better devoted to a study of the living plants. (1 credit)

11. Zoology

The candidate should possess a knowledge of the structure and relationships of a series of animals, gained primarily through the study of living forms and the dissection of specimens in the laboratory. At least four hours per week for one school year should be spent in actual laboratory work, which should include a study of the following forms, or their equivalent: amœba, paramœcium, hydra, starfish, sea-urchin, earth-worm, crayfish, grasshopper, clam, slug, squid, dogfish, pigeon, rabbit. The dissections should be made in as much detail as is indicated in Marshall and Hurst's Practical Zoology, which is recommended as a laboratory manual. Laboratory notebooks, certified by the instructor, must be submitted as evidence of the nature of the work, and must contain a full series of drawings and notes based on original dissections made by the student.

The practical work indicated above should be supplemented by such lectures or reading as will furnish a comprehensive knowledge of the groups studied. As a general reference book Parker and Haswell's Text-book of Zoology (Macmillan & Co., 1897) is recommended. (1 credit)

12. Freehand Drawing

The candidate should be able to draw something well, showing familiarity with the technical principles involved. This should include as follows:

1. Enough perspective knowledge to foreshorten and draw correctly, from nature, the corner of a room, or a table top

with boxes or other articles it may contain. (Extensive knowledge of the theory is not required.)

2. Visual sensitiveness to textures of various objects, and to proportions and character of curves, in objects, in leaf sprays, in birds' wings, etc.

3. The ability to interpret form by light and shade: Special attention should be given to the effect of light and shade, as a whole, on a group consisting of two or three colored objects, such as dishes, books, vegetables, machine parts; also, to the translation of color values into light and shade.

The style of the drawing should be direct, facile, and effective, adapted to the thing drawn, refinement in its proper place and vigor in its proper place. The required skill may be attained in two hundred and forty hours of well-directed practice. A group of objects is usually given as a test, but, if the candidate prefers, a cast, or a head from life, or a machine may be substituted.

The candidate should provide his own materials for the examination: the paper, and pen, or pencil, or charcoal which he is accustomed to use.

Candidates acceptably recommended in this subject should present as many drawings as possible, duly certified, and accompanied by a statement from the teacher as to the amount and kind of instruction given. (1 credit)

13-16. History

All candidates for credit in entrance history must submit evidence of considerable work done in addition to the text-book preparation. For the sake of the training involved, as well as for the information acquired and the stimulating of interest, the following exercises are recommended: Supplementary reading, including the use of original material where possible; notes and digests of reading; abstracts or analyses of specified chapters, both of the text-book and supplementary reading; outlines of subjects, gathering material from all available sources; map drawing from printed data or comparison of existing maps, showing movements of exploration, migration or conquest, territorial changes, or social phenomena.

Such work should be regarded as a means rather than the end of historical study, and in every instance should be adapted in character and amount to the stage of advancement of the class and of the individual pupil. As the pupil progresses in

his study, more advanced work may well be required in the form of historical composition, and of note-taking in the class from talks by the teacher or reports of fellow pupils.

The evidence of such work may be presented in the form of a note-book or bound collection of notes, containing all exercises prepared upon any of the four history subjects arranged in order of their assignment and certified and approved by the teacher. In the case of schools whose recommendations are accepted in place of the examinations, a detailed statement by the teacher as to the character, amount, and quality of the work of each candidate may be submitted in place of the note-book itself.

13. Ancient History

Text-books: *The Oriental Nations*—Myers, General History, pp. 1-86; or West, Ancient History, pp. 1-75; or an equivalent. *Greece*—Botsford, History of Greece; or Myers, History of Greece; or Morey, Outlines of Greek History; or Oman, History of Greece; or West, Ancient History; or the equivalent. *Rome*—Botsford, History of Rome; or Myers, Rome; or West, Ancient History; or Morey, Outlines of Roman History; or an equivalent.

For supplementary reading and reference: Botsford, Story of Rome; Munro, Source Book of Roman History, "Epochs of Ancient History" Series; Wolfson, Essentials in Ancient History; Cox, General History of Greece (Student Series); Pelham, Outlines of Roman History; Abbott, Roman Political Institutions; Shuckburgh, History of Rome; Ginn & Co.'s Classical Atlas, or Kiepert, Classical Atlas; Tozer's Primer of Classical Geography. See, also, Historical Sources in Schools, and A History Syllabus for Secondary Schools. (1 credit)

14. Mediæval and Modern History

Text-books: Myers, Mediæval and Modern History; or Robinson, History of Western Europe; or the equivalent.

For supplementary reading and reference: Robinson, Readings in European History; West, Modern History; Duruy, History of the Middle Ages; Adams, Civilization During the Middle Ages; Bemont and Monod, Mediæval Europe; Fyffe, History of Modern Europe (Popular Edition); Seignobos, Political History of Europe since 1814; the "Epochs" Series; University of Pennsylvania, Translations and Reprints;

Fling, Studies in European History; Putzger, Historischer Schul-Atlas. See, also, Historical Sources in Schools.
(1 credit)

15. History of England

Text-books: Andrews, History of England; or Coman and Kendall, History of England; or Cheyney, A Short History of England; or Gardiner, Student's History of England; or Ransome, Advanced History of England; or Larned, History of England; or Oman, History of England; or Wrong, History of the British Nation; or Terry, History of England; or an equivalent.

For supplementary reading and reference: Bright, History of England; "Epochs" Series; Green, Short History of the English People; Traill, Social England; Larned, History for Ready Reference; Porritt, The Englishman at Home; Adams and Stephens, Select Documents of English Constitutional History; Colby, Sources of English History; English History Illustrated from Original Sources; Kendall, Source Book of English History; Translations and Reprints; and Gardiner, School Atlas of English History. Desirable references are to be found in Andrews, Cheyney, Coman and Kendall, Larned, and Wrong. See, also, Historical Sources in Schools, and A History Syllabus for Secondary Schools. (1 credit)

16. American History

Text-books: McLaughlin, History of the American Nation; or Channing, Students' History of the United States; and Ashley, American Government; or Hinsdale, American Government; or Clark, Outlines of Civics, and Bryce, American Commonwealth (abridged edition); or equivalents.

For supplementary reading and reference: "Epochs of American History" Series; the "American History" Series; Hart, American History Told by Contemporaries; MacDonald, Select Charters, Select Documents, and Select Statutes; and McCoun, Historical Geography of the United States. See, also, Historical Sources in Schools. (1 credit)

17. English Literature

A detailed list of the works read in preparation should be handed to the examiner when the candidate presents himself for examination. Blanks for this purpose may be obtained on application to the Registrar.

a. Elementary.—Candidates for admission who offer subject 17*a* will be examined in reading aloud. In connection with this examination they will be tested in their ability to follow the course of thought in ordinary prose and verse, and in their general knowledge of the books read in preparation.

The teacher may make out the course of reading from the following list of books, choosing two books from Group I, two from Group II, three from Group III, and four from Group IV. [The word *or* is to be understood as permitting only one of the books among which choice is to be made.]

Group I.—Shakspere's Merchant of Venice, Julius Cæsar, Macbeth; the four Gospels (one book), *or* the equivalent of Old Testament Stories (Modern Readers' Bible Series).

Group II.—George Eliot's Silas Marner (½); Goldsmith's The Vicar of Wakefield (½); Thackeray's The Newcomes, *or* Henry Esmond; Scott's Ivanhoe, *or* Rob Roy, *or* Quentin Durward; Cooper's The Last of the Mohicans; Hawthorne's House of the Seven Gables.

Group III.—The Sir Roger de Coverley Papers; Irving's Alhambra, *or* Sketch Book; Hawthorne's Twice Told Tales; Webster's First Bunker Hill Oration; De Quincey's Flight of a Tartar Tribe; Macaulay's Essays on Clive; on Warren Hastings; Carlyle's Essay on Burns.

Group IV.—Pope's Rape of the Lock; a translation of Homer's Iliad, I, VI, XXII, XXIV; Goldsmith's Deserted Village (½); Gray's Elegy in a Country Churchyard (½); Burns's Tam o' Shanter and Cotter's Saturday Night (½); Byron's Prisoner of Chillon (½); Keats's Eve of St. Agnes (½); Coleridge's Ancient Mariner; Scott's Lay of the Last Minstrel, *or* Lady of the Lake, *or* Marmion; Lowell's Vision of Sir Launfal (½); Tennyson's Enid and Geraint; Macaulay's Horatius (½).

(1 credit)

[Substantial equivalents for any books in the foregoing list will be accepted. The list of books prescribed for entrance subject 1 at the University of California is acceptable as a substitute, except that Classic Myths must be replaced by a book from Group II.]

b. Advanced.—The examination in subject 17*b* will presuppose a detailed study of the books presented, and a general knowledge of their place in the history of English literature. Great em-

phasis will be laid on the candidate's power of intelligent interpretation.

Teachers may make out a course from the following list, selecting one book from Group I, one from Group II, and taking up the whole of Group III, or two books from Group I and three from Group II. Repetition of books offered for subject 17*a* should be avoided.

Group I.—Macbeth; Paradise Lost, Books I and II; portions of the Bible; Spenser's Faëry Queene, Book I, Cantos I, II, and III; Chaucer's Prologue to the Canterbury Tales.

Group II.—Macaulay's Essay on Clive, *or* on Warren Hastings, *or* on Milton (½), *or* on Addison (½), *or* Life of Johnson (½); De Quincey's Flight of a Tartar Tribe; Burke's Speech on Conciliation.

Group III.—Hales's Longer English Poems, omitting Spenser's Prothalamion and Shelley's Adonais, and employing only such annotations as are of value in giving a full understanding of the text; *or* Syle's From Milton to Tennyson, omitting Lycidas, Shelley's Euganean Hills, the selections from Pope, Thomson, Johnson, Clough, and Browning, and poems reckoned in 17*a*, IV. For other omissions, equivalent must be offered. (1 credit)

[Fair equivalents for 17*b*, such, for example, as the books prescribed for entrance subject 14 (*a* and *b*) at the University of California, will be accepted.]

[Concerning time of examination, see p. 53; exemption from examination, pp. 53-55, B, I, 1, 2; B, II.]

18-19. Spanish and French

The requirements in Spanish and French are the equivalent of those recommended by the Committee on College Entrance Requirements of the National Educational Association.

The Elementary study of the languages, covering two years of daily recitations, should lay stress on the following points: 1. An accurate knowledge of the forms of the languages, including the inflections, conjugations, and principal parts of verbs. Particular attention should be devoted to this part of the subject; constant drill in the verbal inflections, both written and oral, and dictation exercises of various kinds, are recommended. 2. The elements of syntax, such as the uses of the article, the personal pronouns, the subjunctive, the partitive constructions, and the agreement of the participles. 3. The ability to turn easy English

prose into French or Spanish. 4. The ability to translate ordinary French or Spanish into idiomatic English. 5. The ability to pronounce French and Spanish correctly. It is believed that a fairly good pronunciation can be obtained in the fitting schools, if the necessary time is devoted to the subject. Pronunciation should be studied both theoretically and practically, and the characteristics of vowel qualities, of stress, pitch, and intonation should be pointed out.

The Intermediate requirements are intended to represent a third year of daily recitations. The specific demands are:

1. A thorough knowledge of modern French and Spanish syntax. 2. The ability to turn modern French and Spanish at sight into idiomatic English. 3. The ability to translate connected English prose into French or Spanish. 4. The ability to write French or Spanish from dictation.

For all grades the examination will include a test of pronunciation and the writing of French or Spanish from dictation.

The reading in the Elementary course should cover from four hundred to six hundred duodecimo pages; in the Intermediate requirement a similar amount should be read of prose and verse, a portion to be in the dramatic form. No definite text-books are prescribed, but the books named below will be found adequate for the mastery of these requirements.

18. Spanish

a. Elementary.—Hills and Ford's Spanish Grammar (Heath & Co.), or Garner's Spanish Grammar (American Book Co.); Ramsey's Elementary Spanish Reader (Holt & Co.); Matzke's First Spanish Readings (Heath & Co.); Tamayo y Baus, Un Drama Neuvo (Jenkins, New York); Valdés, José (Heath & Co.); Alarcón, El Capitán Veneno (Heath & Co.)

(2 credits)

b. Intermediate.—Ramsey's Elementary Spanish Text-book (Holt & Co.); Ramos y Vital, Zaragueta (Silver, Burdett & Co.); Caballero, La Familia de Alvareda (Holt & Co.); Alarcón, El Niño de la Bola (American Book Co.); Moratín, El Sí de las Niñas (Ginn & Co.); Echegaray, El Gran Gareoto (Koehler, Boston.)

(1 credit)

19. French

a. Elementary.—Fraser and Squair's French Grammar and Reader, Part I (Heath & Co.), or Whitney's Practical French

Grammar, Part I (Holt & Co.), or Grandgent's Essentials of French Grammar (Heath & Co.), or Chardenal's Complete French Course (Allyn & Bacon), or François' Beginners' French (American Book Co.); Super's French Reader (Heath & Co.), or Aldrich and Foster's French Reader (Ginn & Co.), or François and Giroud's Simple French (Holt & Co.); Dumas, La Tulipe Noire; Halévy, L'Abbé Constantin; Labiche, Le Voyage de Monsieur Perrichon; Mérimée, Colomba. For the study of Pronunciation Matzke's Primer of French Pronunciation (Holt & Co.) is recommended. (2 credits)

b. Intermediate.—Fraser and Squair's French Grammar and Reader, Part II (Heath & Co.), or Whitney's Practical French Grammar, Part II (Holt & Co.), or Edgren's Compendious French Grammar (Heath & Co.); George Sand, La Petite Fadette; Balzac, Eugénie Grandet; Victor Hugo, Hernani (Heath & Co.); Fontaines, Historiettes Modernes (Heath & Co.). (1 credit)

20. German

The requirements in Elementary and Intermediate German are essentially those recommended by the Committee on College Entrance Requirements of the National Educational Association.

a. Elementary.—The ability to translate easy German prose and verse at sight; an accurate knowledge of the principles of grammar, embracing especially inflections, word-order, syntax, the composition of words, the force of prefixes and suffixes, and the relation of the English and German consonantal changes; the ability to translate easy prose from English into German; the ability to pronounce German and to recognize German words and simple sentences when spoken. Careful attention should be given to the rules for pronunciation, length of vowels, and accentuation, to insure the fluent and intelligent reading of the German texts used in the class-room. This preparation would be represented, approximately, in reading, by Brandt's, Whitney's, Hewett's, or Thomas and Hervey's Reader, and the careful study of one or more modern dramas (about two hundred duodecimo pages of easy German); in grammar, by Whitney's, Brandt's, Joynes-Meissner's, or Thomas's Grammar; and in German prose, by the first twenty-six exercises in Harris's German Prose Composition, or the Themes in Thomas and Hervey's German Reader. The work in German prose should be preserved in

note-books used exclusively for that purpose, written in ink, and consisting of the original work done by the student, followed by the corrected work approved by the teacher.

All candidates should present a statement from their former teacher of the amount of German read and the text-books used.

(2 credits)

b. Intermediate.—The ability to translate ordinary German prose and verse at sight; a thorough knowledge of word-formation, derivatives, and cognates; advanced German syntax, with especial reference to the uses of the tenses, the modal auxiliaries, and the subjunctive and infinitive moods; the ability to translate into German easy connected English prose.

It is believed that this preparation can be acquired by the careful reading of five hundred duodecimo pages of classical and contemporary prose and verse, in addition to the reading required for Elementary German. It is recommended that at least one-half of this reading be selected from the following works: Lessing's Minna von Barnhelm, Gœthe's Egmont, or Götz von Berlichingen, Schiller's Wilhelm Tell, or Maria Stuart, Heine's Harzreise, Freytag's Bilder aus der deutschen Vergangenheit. For the preparation in translation from English into German the first fifty pages of von Jagemann's, or Poll's German Prose Composition, or its equivalent, is recommended. The work in German prose should be preserved in the manner suggested under Elementary German. It is desirable that candidates should acquire the ability to follow a recitation conducted in German, and to answer in simple German sentences.

All candidates should present a statement from their former teacher of the amount of German read and text-books used.

(1 credit)

c. Advanced.—A fourth credit in German may be given to candidates who fulfill, in addition to the preparation required in Elementary and Intermediate German, the following requirements: Advanced German grammar and syntax; elements of the comparative grammar of English and German; study of Gœthe's Hermann und Dorothea, or Iphigenia, Lessing's Nathan der Weise, and Schiller's Wallenstein, and the reading of advanced literary and scientific German prose; advanced German prose composition, and the ability to follow lectures given in German.

Candidates should present statements from their former teachers of the work done. (1 credit)

21. Latin

a. Elementary.—The requirements for Elementary Latin are as follows: 1. An accurate knowledge of the ordinary forms of the language. 2. The ability to pronounce Latin so as to observe the proper quantity of vowels. 3. A familiarity with the ordinary rules of syntax. Particular attention should be devoted to these three points. 4. The ability to translate easy Latin prose into English. 5. The ability to turn simple English sentences into Latin.

For 1905-06 the examinations in translation will be based on the first four books of Cæsar's Gallic War, but approved schools may use an equivalent Latin text, and are recommended to increase the amount of reading indicated. Some attention should also be paid to translation at sight from easy prose.

All candidates should present a statement from their former teacher of the amount of Latin read and the text-books used.

(2 credits)

b. Advanced.—The requirements for Advanced Latin include those for Elementary Latin, together with the following: 1. Continued training in Latin forms and syntax. 2. Knowledge of the rules of prosody, and ability to scan Vergil's hexameters. 3. The ability to translate from Cicero's Orations. 4. Careful preparation of the first, second, fourth, and sixth books of Vergil's Æneid, with less detailed knowledge of the third and fifth books. 5. The ability to turn into Latin connected English of simple style.

For 1905-06 the examinations in translations will be based on the Vergil assigned and on Cicero's Orations against Catiline, for Archias, and for the Manilian Law; but approved schools may use any equivalent Latin prose text, and are recommended to add Sallust's Catiline and other speeches of Cicero to the minimum given above. All schools should pay some attention to translation of prose at sight, and the examination will include a passage from Cicero to test the ability of candidates in this respect. One credit may be given in advanced Latin to those who are deficient in the composition or in the Vergil, or who have completed either the Cicero or the Vergil with half of the required training in prose composition.

All candidates should present a statement from their former teacher of the amount of Latin read and the text-books used.

(2 credits)

22. Greek

a. Elementary.—Grammar, the inflections, the formation of words, and the essential points of syntax; Xenophon's Anabasis, Books I-IV, or an equivalent; prose composition (Collar and Daniell's text-book is recommended); translation at sight of easy prose. It is expected of every student that he be able to read Greek aloud without stumbling. (2 credits)

b. Advanced.—Homer, Iliad, Books I-III, or an equivalent; advanced prose composition. The candidate must show a thorough acquaintance with the forms and syntax of Homer, and must be able to scan any given passage exactly and to read it rhythmically. In the writing of Greek the candidate should have a year's training beyond that required in Elementary Greek. (1 credit)

23. Biology

A course of study and laboratory work extending through one school year, the time divided equally between Botany and Zoology. The character of the work is indicated under the respective statements of Botany and Zoology (subjects 10 and 11). (1 credit)

24. Physiography

The equivalent of Davis's Physical Geography, with an approved laboratory and field course of at least forty exercises actually performed by the candidate. The original note-book, certified by the instructor, and recording, with dates, the steps and results of the observations made by the candidate, must be submitted as evidence of the nature of the work. Special stress will be placed upon the candidate's ability to interpret physiography. (1 credit)

25. Mechanical Drawing

The candidate is expected to have acquired neatness and accuracy in the use of drawing instruments. His course should have included practice in line work, lettering, machine or architectural working drawings, and tracing. He should present for inspection as much of his work as possible, duly certified by his teachers. As an examination the candidate may be called upon to make a simple working drawing of some specified object.

Equivalent to about two hundred and fifty hours of work under instruction. (1 credit)

26-29. Shopwork

Two things will be expected of candidates for entrance credit in these subjects: first, manual dexterity, as evidenced by neatness, accuracy, and dispatch in the execution of a given piece of work; second, a knowledge of the materials and tools used, and a thorough understanding of the principles involved in the operations.

Candidates who have been trained in manual training schools or in commercial shops should present letters from their teachers or employers stating clearly and in some detail the time they have been employed, the kind of work they have done, and its quality. Every candidate, no matter what his credentials are, will be required to undergo an examination. This may be oral, written, the actual execution of a set piece of work, or all combined. In each subject the ability to read and follow a working drawing is expected.

Below are given the more specific requirements for the particular subjects, with the understanding that the foregoing general requirements apply to them all.

26. Woodworking

The ability to recognize the common varieties of wood and some knowledge of their physical properties, such as ease of working, strength, toughness, hardness, etc., is expected. Candidates must be familiar with the uses of the principal hand tools of carpentry and with their care. They should be able to make the ordinary kinds of joints and splices. They should be familiar with the operation of the lathe, jig-, band-, and circular-saws, and planing machines.

Equivalent to about two hundred hours of work under instruction in a manual training school, or a year in a commercial shop. (½ credit)

27. Forge Work

This demands an elementary knowledge of the properties of wrought iron and steel, and of the proper heats at which to work them. The management of forge and fire and the nature and uses of all the ordinary blacksmithing tools should be known. The candidate must be able to execute all of the common forging processes, including the various forms of welds in iron and steel; he is also expected to understand hardening, tempering, and annealing.

Equivalent to about two hundred hours of work under instruction in a manual training school, or a year in a commercial shop. (½ credit)

28. Foundry Work

The candidate should have a knowledge of the tools and processes used in the ordinary forms of green sand moulding and core work. He should be familiar with the cupola and know how to charge and operate it. He must have a knowledge of the properties of cast iron, and should have had experience in pouring cast iron as well as in moulding.

Equivalent to about two hundred hours under instruction in a manual training school, or a year in a commercial foundry. (½ credit)

29. Machine Shop

A knowledge of the tools and processes used in the working of iron, steel, and brass is demanded of the candidate. He should be able to execute all forms of vise-work, such as chipping, filing, scraping, fitting, and finishing. He must be familiar, through experience in operation, with the simpler forms of machine tools, such as the lathe, drilling machine, planer, shaper, and milling machine.

Equivalent to about four hundred hours under instruction in a manual training school, or two years in a commercial shop. (1 credit)

A. Entrance Credits on Examination

Examinations in all entrance subjects are held at the University in January and in August. In May examinations are held in English Composition and English Literature only. Special examinations outside of the regular examination days, may be arranged at the discretion of the Committee on Admission; but in such cases a special fee of two dollars will be charged the candidate for each subject in which an examination is taken.

[Candidates desiring examinations at the close of the school year in subjects other than English are advised to take the June examinations of the College Entrance Examination Board. The Board examinations in English may also be taken instead of the University examination. (For particulars and other information address Secretary, College Entrance Examination Board, Sub-Station 84, New York City.)]

Specimen examination questions may be obtained on application to the Registrar.

Entrance examinations are held in the following order (for dates, see p. 5):

First Day—Elementary Algebra, 8:15; Advanced Algebra, American History, 10:15; Plane Geometry, Botany, 1:30; Solid Geometry, Mediæval and Modern History, 3:30; Trigonometry, 4:45.

Second Day—Physiology, Elementary French, 8:15; English Composition, 10:15; Chemistry, Intermediate French, 1:30; English History, 3:30.

Third Day—Physics, Elementary Spanish, 8:15; Intermediate Spanish, Elementary German, Physiography, 10:15; Zoology, Intermediate German, 1:30; Advanced German, Elementary Latin, 3:30.

Fourth Day—Biology, Mechanical Drawing, Advanced Latin, 8:15; Woodworking, Forge Work, Elementary Greek, 10:15; Freehand Drawing, Foundry Work, Advanced Greek, 1:30; Ancient History, Machine Shop Work, 3:30.

The examinations in English Literature are oral and are held during the first two or three days of the examination period; but appointments must be made during the forenoon of the first examination day, unless arranged in advance by letter or otherwise. [Correspondence regarding appointments in oral English should be addressed to Prof. S. S. Seward, Jr., Stanford University, Cal.]

Candidates for admission may, if they prefer, take a part of their examinations a semester or a year before they propose to enter; but (unless following graduation from an approved school) account will not be taken of an examination passed more than sixteen months before the proposed time of entering.

B. Entrance Credits Without Examination

I. On Fulfilling Particular Requirements

1. Full undergraduate standing, without further tests will be granted as follows:

(*a*) To candidates who have completed all the preparatory studies required for full undergraduate standing at Bryn Mawr, California (Groups I, II), Chicago, Columbia, Cornell (A. B. course), Harvard, John Hopkins, Michigan (15 unit plan), Minnesota, Princeton (A. B. course), Smith, Vassar, Wellesley, Wisconsin (14 unit plan), or Yale, and who have passed the re-

quired examinations thereto or who present the necessary recommendations from schools duly accredited thereto.

(*b*) To holders of sixty-count Diplomas and sixty-count Academic Certificates issued by the Regents of the University of the State of New York. [Diplomas of a less number of counts (and subsequent pass cards) will be adjusted on the same basis as recommendations from approved schools (see below)].

(*c*) To recommended graduates of the California State Normal schools, and to graduates of other Normal Schools approved by the California State Board of Education as of equal rank with the State Normal Schools of California, who are holders of the highest grade diploma issued by these Normal Schools. (For conditions on which advanced standing may be granted Normal School graduates, see p. 56).

(*d*) To candidates from Japan, as follows: (1) to matriculates of the Imperial Universities of Tokyo and Kyoto; (2) to graduates of the Sapporo Agricultural College, the Higher Commercial School, Doshisha College, and Keiogijiku College; (3) to graduates of the eight Higher Schools (Kotogakko), the two Higher Normal Schools, the Girls' College, and the Girls' Higher Normal School. But before admission to the University such candidates must show ability to use and to understand readily both written and spoken English.

2. Preliminary credits secured by passing the regular entrance examinations of institutions of equivalent rank, or of the College Entrance Examination Board, will be accepted in subjects corresponding to those outlined in the entrance list (pp. 36-52).

II. On Recommendation from Approved Schools

The University has made no provision for inspecting and accrediting preparatory schools, but will receive recommendations from schools accredited by (1) the New England College Entrance Certificate Board, (2) the North Central Association of Colleges and Secondary Schools, (3) colleges and universities of high rank.

Limited accrediting privileges may also be granted, at the discretion of the Committee on Admission and Advanced Standing and subject to such conditions as may be imposed by the Committee, to public high schools and preparatory departments of colleges located in territory outside the range of the accrediting systems named above.

(After August, 1905, recommendations will not be received from schools not so accredited, except as provided under B, I, above.)

Recommendations from such accredited schools covering subjects outlined in the entrance list (pp. 36-52) will be accepted in place of entrance examinations (except in English Composition), provided—

1. The school maintains a full four years' course of high school work;

2. The candidate has completed the full course and has been duly graduated after at least one year's attendance.

Entrance examinations will not be waived in particular subjects where the time given to the subject or the amount of work covered is less than that indicated in the outline of entrance subject (pp. 36-52) or where the grade of work is unsatisfactory.

The entrance examination in English Composition will be waived on the presentation of an acceptable exercise-book. This book must contain at least six compositions of about 250 words each, written in class and not corrected by the teacher, no more than two of them to be on subjects drawn from the pupil's reading. These compositions must be written without any aid whatever, and upon topics assigned by the teacher; they must remain in the custody of the teacher until submitted to the University, and must be submitted exactly as written. Blanks to be filled out by the teacher and sent in with the exercise-books, may be obtained on application to the Registrar. To be acted on in August, the books must be in the hands of the Registrar by August 10th; to be acted on in January, by December 15th.

Recommendations will be considered at any time of the year, but, since, in general, candidates cannot be assured of admission to the University without examination in one or more subjects, it is important that recommendations be forwarded as early as possible.

Blanks for admission on recommendation may be obtained from the Registrar.

II. AS SPECIAL STUDENTS

Persons under twenty-one years of age will not be received as special students.

The privileges extended to special students are not intended for those who come directly from the schools, with insufficient

preparation for regular standing, but for those who are qualified by age, character, practical experience, and habits of study to profit by university courses. Such properly qualified persons may be admitted as special students, without fulfilling the regular entrance requirements, upon presenting satisfactory credentials and testimonials; except that on account of the limitation upon the number of women students, women will not be admitted as special students. This latter provision will not affect those who have already matriculated in the University.

Special students are subject to the same University regulations as regular undergraduates, and they may become candidates for graduation upon fulfilling all University requirements, including those for entrance (see, also, p. 61).

A failure on the part of any special student to maintain a good standing in the studies to which he is admitted will at once sever his connection with the University; and a special student suspended for failure in University work may be re-admitted only upon attaining regular undergraduate standing.

Blank applications for admission as special students may be obtained from the Registrar.

III. TO ADVANCED STANDING

Students from other institutions of recognized collegiate rank, who present letters of honorable dismissal, may be admitted to such standing and upon such terms as the Faculty may deem equitable. Students from institutions of equivalent rank, who maintain a satisfactory record after admission, may expect to receive the same standing as at the former institution, except that no such student can be given more than three years' advanced credit (ninety hours toward graduation), and that differences in standard of entrance preparation will be taken account of. Every candidate is required to present, along with a catalogue of the institution in which he has studied, a full statement, duly certified, of the studies he has completed, including studies passed or credited at entrance.

Recommended graduates of approved State Normal Schools where the normal training has been preceded by a full four years' high school course, may be granted an advanced credit of not more than thirty hours.

Blank applications for admission to advanced standing may be obtained from the Registrar.

All applications for advanced standing on the basis of work done before entering the University must be filed within two years after matriculation; and such applications will not be received at a later date.

IV. TO GRADUATE STANDING

Graduates of this University, and of other institutions of recognized collegiate rank, may be admitted to graduate standing in the University upon presentation of diplomas or equivalent credentials. Admission to technical graduate standing does not imply admission to candidacy for an advanced degree (for the conditions of such candidacy, see p. 68). If graduates of other universities desire to become candidates for the baccalaureate degree, the question of hours required for graduation may be waived, upon approval of the Committee on Admission and Advanced Standing, and the degree conferred on the satisfactory completion of not less than thirty hours of University work and the fulfillment of all major and minor requirements. Graduate students not candidates for any degree, may be permitted, upon the approval of the major department, to undertake such work as their previous training seems to warrant.

UNIVERSITY RESIDENCE

Registration

On the appointed Registration Days, in August and January, each student must obtain a certificate of registration *in person,* at the Registrar's office.

Matriculated students may register after the appointed Registration Days and during registration week, upon payment of a special fee of two dollars; during the week following the fee for late registration will be four dollars; after that the fee will be increased one dollar for each week's delay. Registration of undergraduates and specials will not be permitted later than one month after the beginning of instruction.

Study Card

At the Registrar's office the student receives a card for selection of studies for the semester. This card, properly filled out, and approved by the major department, must be filed with the Registrar not later than the Friday following Registration Day; but late study cards will be accepted upon payment of a special fee of two dollars. Students registering after the Friday of registration week, must have their study cards indorsed by all the instructors under whom work is taken.

Enrollment in Classes

A student desiring to enter any class must present his certificate of registration to the instructor for enrollment at the beginning of each semester. Whether the student is qualified for enrollment in any particular class is a question to be decided by the instructor in charge. In general, the prerequisites for taking any given course are noted under "Courses of Instruction."

Change of Studies

A student desiring to drop a subject once taken up, or to take up a new subject after the study card has been filed, must present to the Committee of Registration a petition for such change, approved by the major department and by the instructors whose sub-

jects are to be taken or dropped. In general, petitions so approved if they do not give the student too many hours or too few hours, and if presented within one month after the beginning of the semester, are granted without question. If presented at a later time in the semester they will be granted only for extraordinary reasons, and, where the taking up of new subjects is involved, only on payment of a special fee of two dollars for each course; if otherwise acceptable but presented after the close of the semester, they will be granted only on payment of a special fee of four dollars for each course. Petitions to drop subjects will not be considered during the last six weeks of the semester.

Change of Major Subject

Petitions to change the major subject will be granted when approved by the departments in charge of both the old and the new subjects, the student being held to all the requirements of the new major subject. In general, the major subject may be changed at the end of the first year, and in some cases later, without appreciable loss of time to the student.

Amount of Work

Fifteen hours per week of recitations or lectures, or their equivalent in laboratory work, constitute an average semester's work. In general, students may register for as few as *thirteen* or as many as *eighteen* hours, except that where conditions or failures have been incurred in the preceding semester not more than *fifteen* hours may be registered unless by special permission of the Committee on Registration. But in the case of students doing outside work for self-support or otherwise, and where considerations of health are involved, special restrictions will be made upon recommendation of the professor of hygiene. Permission to register for less than *thirteen* hours may also be granted for special reasons; but registration for less than nine hours will not be accepted. Graduate students are not held to any special number of hours, but registration will not ordinarily be permitted unless such students are prepared to devote at least half of their working time to University study. Petitions for irregular hours should be presented at the beginning of the semester.

Every hour for which credit is given is understood to represent approximately, for the average student, three hours of actual work per week, through one semester. Thus, in lecture or recitation work, one hour is allotted to the lecture or recitation and two

hours for preparation or subsequent reading and study on the part of the student. Where the time is wholly occupied with drawing, field, or laboratory work, three full hours per week through one semester are expected of the student for each hour that counts toward graduation. Where the drawing, field, or laboratory work is supplemented by systematic outside reading or experiment under the direction of the instructor, such a reduction may be made in actual drawing, field, or laboratory time as seems just to the department concerned.

Conditions and Failures

A student conditioned in any subject may arrange with the instructor concerned for such supplementary examinations or study as will make good the deficiency; but such deficiency must be removed within one year after the condition is incurred, otherwise the condition will be considered a failure. Work reported as incomplete may be made up during the first or second semester's registration after the incomplete is incurred; but if not made up until the second semester, the incomplete work shall be duly entered on the student's study card and shall count as part of the permitted registration for that semester to the extent of not more than three credit hours. A student failing in any subject cannot receive credit for the portion in which the failure is incurred until the subject has been re-registered and taken over again in class. A condition or failure or withdrawal from class without permission of the Committee on Registration, limits the student to *fifteen* hours the semester following.

Entrance Conditions

Students admitted to partial undergraduate standing may make up entrance deficiencies (1) by completing before graduation, in addition to the one hundred and twenty hours required for graduation, five hours of university work for each entrance credit lacking (except in the case of English Composition, which must be passed on examination, or completed in a special class as provided on page 36); or (2) by passing entrance examinations in the additional subjects necessary, provided such examinations are passed within one year after admission to the University. All supplementary tests necessary to give final entrance credit in any recommended subjects must be fulfilled within one year after matriculation.

From Special to Regular Standing

Special students may be entered in regular standing and become candidates for graduation, on passing examinations in the required number of entrance subjects. In place of entrance examinations, university work to the amount of five hours for each entrance credit may be offered in university subjects which are also included in the entrance group.

A special student who has completed one hundred and fifty hours of university work, including all major requirements, and whose general university record is deemed proof of superior scholarship, may be relieved of some or all of his entrance deficiencies at the discretion of the Committee on Admission and Advanced Standing. Petitions to this end will not be considered by the Committee until after the student has completed one hundred and twenty hours of university work.

University Credit for Extra Entrance Subjects

Credit toward graduation may be given for entrance subjects in excess of the number required for admission, provided such extra entrance subjects are also university subjects, and are successfully continued in the University within two years after matriculation, and provided the student's general University record is deemed proof of superior scholarship. Applications for such university credit must be made within two years after matriculation. After matriculation additional entrance credits may be offered only for the purpose of making up entrance deficiencies, except that recommended subjects requiring supplementary tests for final credit may be counted as extra entrance subjects, if such supplementary tests are fulfilled within one year.

University Credit for Special Courses

University credit is given only for work done in residence at the University. Work prescribed by any professor of such a nature that it cannot be done at the University or can be more advantageously done elsewhere may be regarded as work done in residence. But such special work must be duly registered in advance and must be included in the thirty-six hours permitted for any calendar year.

Matriculated students on leave of absence may take work in other universities, usually without any restrictions other than those imposed by the university in question. But work undertaken in any Summer Session may be subject to special regula-

tions; and the last semester's work of every candidate for a degree must be taken in this University.

Advanced Standing

Advanced standing for work done before matriculation will generally be given only when certified as having been completed in some institution of recognized collegiate rank, except as provided above (p. 61) for extra entrance credits, or, in particular cases, to recommended graduates of approved State Normal Schools (see p. 56). But in special cases permission may be given by the Faculty to receive credit on examination for work equivalent to regular University courses. Application for such examinations, with satisfactory evidence of the work accomplished, must be presented to the Committee on Advanced Standing. Applications for advanced standing on the basis of work done before entering the University must be made within two years after matriculation.

Leave of Absence

A student desiring to leave the University for a brief time should apply to the Committee on Registration. If leave of absence is desired on account of sickness, the petition must be indorsed by the professor of hygiene. A leave of absence is merely a justification of the absence and not a relief from the work that has been missed. A leave of absence is usually necessary only in case of interrupted work; a student in good standing absent one or more semesters may re-enter at the beginning of any semester without formal petition.

Expenses of the Student

Fees

Graduate students in Law and Engineering, and all undergraduates, are charged a registration fee of *ten dollars* per semester; special students, *fifteen dollars* per semester. But these registration fees are waived in the case of *bona fide* residents of California who have been resident in the State at least one year immediately preceding registration. Students in laboratory courses pay for the materials which they use, and in various courses syllabus fees are charged. Laboratory and syllabus fees are different for the different courses, ranging from *fifty cents* to *twenty-five dollars* per semester (see under "Courses of Instruction").

Cost of Living

The cost of living in Roble Hall, including board, room, light, heat, and attendance averages about twenty-seven dollars per month. Students furnish their own linen, blankets, towels, and napkins. Rooms may be reserved in advance by making a deposit of two dollars. Women students may live outside the Hall only in places approved by the University.

Rooms in Encina Hall, furnished similarly to those in Roble Hall, but without board, cost from $6.00 to $6.50 per month, with two in a room. There are a few single rooms at $8 per month. Students occupying a double room alone pay the full price of the room. Each double room is furnished with two single beds. Rooms may be reserved in advance by making a deposit of two dollars.

In Palo Alto and College Terrace, at an average distance of a mile and a quarter from the University, good rooms and board, in private houses, can be obtained, at from twenty to twenty-five dollars per month. A considerable number of students live in co-operative clubs, in which the cost of board and room is reduced to about fifteen dollars per month; these rooms are lighted and heated, but usually unfurnished. Special commutation tickets are issued by the Southern Pacific Company, and students living in towns on the line of the railway, from San Francisco to San Jose, easily go to and from the University daily. Carriages connect with all trains at Palo Alto. A careful list of available rooms and boarding-places outside the Halls is compiled a week or ten days before the opening of the University year in August, and is on file for easy reference at the Information Bureau of the Christian Associations, in the quadrangle. New students will find no difficulty in securing suitable accommodations upon their arrival.

The University Inn, located near the quadrangle, has dining accommodations for about three hundred students.

Books and stationery will average from eighteen to twenty-five dollars per year.

The expenses of the student, exclusive of clothing and railway fares, need not exceed $275 to $350 per year.

Memorial Scholarship

The Leland Stanford Junior Scholarship, established by Mrs. Stanford, in 1900, pays the necessary expenses of its holder throughout the undergraduate course.

Self-Support of Students

A considerable number of students manage, in one way or another, to earn the whole or a part of their expenses while attending the University. Such opportunities occur in the line of office and laboratory assistance, personal services of numerous kinds, the management of various student enterprises, agencies for laundries, etc.

The Christian Associations register without charge all students who apply for employment, and supply employers with student labor as demanded. In general, the demand and supply are very nearly equal, but the attention of new students who intend to earn the whole or a part of their living is called to the following results of past experience:

1. There is a constant *over-supply* of those wishing to do teaching and clerical labor. None but those having superior qualifications and experience are likely to secure employment the first semester.

2. There is a constant demand for efficient stenographers; also for men and especially women students who can do domestic labor of any kind; many earn board and room rent by waiting on table, washing dishes, general housework, house cleaning, gardening, etc.

3. Students who can do any kind of domestic or manual labor *well,* and who have thoroughly good health, can earn their board by three hours' work per day, or board and room by four hours' work per day. Those who are bookbinders, printers, mechanics, or carpenters, will have a decided advantage in obtaining employment. But no student should come to the University without resources sufficient for the expenses of one semester.

4. The University curriculum is adapted to those who have control of their entire time for study. The student who must earn his living, therefore, should expect to take less than the usual amount of University work.

5. No student should come expecting to earn money, who can do nothing well; skill is absolutely essential, as competition is quite as severe in the college community as elsewhere.

6. Opportunities for earning money during the summer vacations can usually be counted on, the demand for canvassers being most constant.

Particular inquiries concerning opportunities for self-support should be addressed to the Secretaries of the Christian Associations.

University Health Control

The University exercises an advisory control over student health affairs and athletics.

Every student upon entering the University is required to report to the University Health Officer for a brief medical examination of his eyesight and general health. Any condition which may place a limitation on the amount or kind of work planned by the student is discussed with him or made the subject of a report to his major department or to the Committee on Registration.

Students intending to train for any of the athletic teams, or to register for gymnasium work, are required to pass a careful physical and medical examination at the beginning of each semester.

A careful inspection of all boarding and rooming houses in the community is carried out under the supervision of the Public Health Committee, and only those are permitted to register who arrange to live in houses which have been approved.

All students are entitled to medical consultation and to individual advice in other matters directly or indirectly relating to their health, at any time during the year; but no treatment is undertaken by the University.

Students' Guild

Provision for the care of all cases of serious illness is made by the Guild, which is a student organization now thoroughly equipped for its work. A hospital is owned and operated through the management of a Board of Directors composed of students and members of the faculty. Complete operating-room facilities and isolation-wards have been provided. The hospital is in charge of two resident nurses and an adequate housekeeping staff.

All students are required to become members of the Guild by paying the fee, which for 1904-05 is two dollars each semester. A uniform hospital rate of one dollar per day is charged all members of the Guild.

The officers of the Guild for 1904-05 are as follows: President, Oswald S. Lousley, '05; Vice-President, Helen L. Crandall, '05; Secretary, Norman E. Dole, '04; Treasurer, Ernest Y. Pomeroy, '05.

GRADUATION

Candidates may present themselves for graduation in January, May, and September.

No degree will be conferred upon any person who has not spent at least one year in resident study at the University. No honorary degrees are given.

Teachers' Certificates

County, or City and County Boards of Education are authorized to grant High School Certificates (as provided in Section 1521, 1775, and 1792 of the Political Code of California, and in accordance with the regulations of the State Board of Education), to graduates of this University upon presentation of a recommendation from the Faculty; *provided,* that such recommendation shall show that the applicant has taken courses in the theory of education, or in the actual practice of teaching, under the supervision of the Department of Education, equivalent to twelve hours per week for one-half year; *provided,* that after July, 1906, at least one-third of the prescribed work in education shall consist of actual teaching in a well-equipped training school of secondary grade directed by the Department of Education. By action of the State Board of Education, January 20, 1905, it is provided, as a temporary measure, that this practice teaching, together with the other required courses in education, may be taken in the California State Normal Schols.

Recommendation of Teachers

The University undertakes (1) to keep a record of students and graduates who wish to teach, or to be transferred to other teaching positions, and (2) upon applications of Boards of Education, School Trustees, or other officials to recommend for suitable vacancies such candidates as seem most likely to succeed.

Most high schools expect their teachers to handle two or three subjects. In order to meet this demand, students who intend to teach are urged to decide on their minor subjects as early as

possible in their course, and to take sufficient work in them to meet the departmental requirements for recommendation.

The University does not solicit positions for its graduates, and reserves the right to refuse to recommend candidates enrolled. Information received from University instructors and others regarding the fitness of candidates is regarded as confidential, and general letters of recommendation are not given. No charge is made for any service rendered.

Blanks for registration may be obtained of the Secretary at the Registrar's office. They should be filled out each year, preferably during March or April.

Bachelor of Arts

The degree of Bachelor of Arts (A. B.) is conferred upon candidates who have satisfactorily completed a total of one hundred and twenty hours of University work and who have also satisfied the requirements in major and minor subjects.

Thirty hours constitute a normal year's work (see p. 59), but the ordinary class divisions (freshman, sophomore, junior, and senior) are not recognized by the University. The degree is conferred whenever the requirements are met, without regard to the time spent, except that at least thirty hours (including the last fifteen) must be completed in this University.

Each student selects as his major subject or specialty the work of some one department. This department has the authority to require the completion of this *major* subject, and also of such *minor* subjects in other departments as may be considered necessary or desirable collateral work. Such major and minor requirements taken together will not (except in the departments of applied science) exceed forty hours of University work, or one-third of the student's time during his undergraduate course.

With these exceptions, all the undergraduate work in all departments is elective. The student may freely choose for such elective work any subject taught in the University, which his previous studies have prepared him to undertake.

The department in charge of the major subject of any student is expected to act as adviser to the student in educational matters, and the recommendation of the department is necessary to graduation.

Bachelor of Laws

The professional degree of Bachelor of Laws (LL. B.) is conferred upon students who have previously received the aca-

demic degree of Bachelor of Arts, or its equivalent, and who have completed fifteen courses in Law, exclusive of Elementary Law and the Special Courses in Law. Students over twenty-one years of age (including Special Students) who have completed fifteen courses in law, including the first year courses, with distinguished excellence, in residence at this University, but who have not received a collegiate degree, may also be given the degree of Bachelor of Laws.

Candidacy for Advanced Degrees

Every applicant for an advanced degree must file at the Registrar's office not later than the beginning of the semester preceding that in which the degree is sought, a formal application including a statement of the proposed course of study. This application must be approved by the department faculty concerned, and upon acceptance by the Committee on Graduation the applicant is admitted to candidacy for such advanced degree. It is advisable that such application be made as early as possible in the student's course. Where a thesis is required it shall be upon a subject approved by the department, and, if for the doctor's degree, shall be presented in its final form at least six weeks before the close of the semester in which the degree is sought. Accepted theses for the master's degree, shall be bound in a uniform style and deposited in the University Library. No advanced degree will be conferred except upon the recommendation of the Committee on Graduate Study.

Master of Arts

The degree of Master of Arts (A. M.) is conferred upon graduates of this University, and upon others who have had an equivalent training elsewhere, on the satisfactory completion, in residence, of one year of graduate work, beyond the baccalaureate requirements of the department in which the degree is sought, and on the presentation of an approved thesis, or the passing of a satisfactory examination, or both. At least two-thirds of the year's work required of the candidate is to be devoted to the major study. Work done in the University outside of the requirements for the degree must be registered, but will not be taken into account in connection with the degree.

Special regulations are as follows:

1. A report upon the character of the work done will be made by each instructor under whom a candidate is registered.

2. Some evidence of ability to do original work is required of every candidate. In addition, therefore, to examination, a thesis is expected, unless such evidence is furnished in other ways.

Engineer

In the departments of applied science the professional degree of Engineer is conferred upon graduates of this University, and upon others who have had an equivalent training elsewhere, on the satisfactory completion, in residence, of one year of professional study beyond the baccalaureate requirements of the department in which the degree is sought, and on the presentation of an approved thesis, showing ability to do independent work.

Doctor of Philosophy

The degree of Doctor of Philosophy (Ph. D.) is conferred upon graduates of this University, and upon others who have had an equivalent training elsewhere, on the satisfactory completion of at least three years of graduate work, beyond the baccalaureate requirements of the department in which the degree is sought, under the following conditions:

1. The degree is given only on the ground of advanced scholarship and the ability to do independent work in some special line, and not for merely faithful study for a prescribed time or course, nor for miscellaneous study. Three years represents the minimum time in which the degree can be obtained and often a longer period of study will be necessary.

2. Graduate work done elsewhere may be accepted in place of resident study in this University; but in no case will private study without sufficient guidance, or pursued at a distance from libraries or laboratories or other necessary facilities, be accepted as an equivalent; and no degree will be granted to any person who has not spent at least the last year of such study in residence at this University.

3. The course of study shall embrace one major subject and one or two minors in related departments. The minor subject or subjects shall represent approximately one-third of the course of study; except that such minor subjects may be waived, on the recommendation of the department in which the major subject is taken, and with the approval of the Committee on Graduate Study, whenever the general preparation or special needs of the candidate make such a course seem desirable.

4. The candidate must present a thesis of such a character as shall display power of original and independent investigation and constitute an actual contribution to knowledge. He must guarantee the printing of the thesis, in a form approved by the Committee on Graduate Study, within one year after the degree is conferred, and must deposit one hundred copies in the University Library.

5. The candidate must sustain such final examinations in major and minor subjects as may be prescribed by the departments in which studies are taken, and also shall submit to such tests or examinations as may be required by the special Examining Committee of the Faculty. This special committee shall be responsible for the fitness of the candidate.

The special Examining Committee shall consist in each case of (1) the professor in charge of the major subject, (2) the one or more professors in charge of the minor subjects, (3) two members of the Committee on Graduate Study whose departments lie nearest to that of the major professor, and (4) the Chairman of the Committee on Graduate Study, acting as its secretary.

6. In addition to the foregoing conditions prescribed by the University, the Committee on Graduate Study will, in general, insist upon the following conditions: (1) that all candidates be required to show a reading knowledge in French and German; (2) that, whenever practicable, the departmental examinations, in both major and minor subjects, be written, the papers of candidates to be submitted to the special committee prior to the day fixed for the final test before that committee; (3) that examinations in minors be held not earlier than the second semester before the time named for conferring the degree.

COURSES OF INSTRUCTION

[*Courses for 1904-05, with Announcements for 1905-06*]

GREEK

Augustus Taber Murray, Professor.
Henry Winchester Rolfe, Associate Professor.
Ernest Whitney Martin, Instructor.

With the co-operation of Professor Fairclough, Assistant Professor Elmore, and Instructor Foster of the Department of Latin.

Undergraduate Courses

Instruction in the lower classes is given chiefly by means of recitations, but as the student advances these are supplemented by lectures.

It will be seen that provision is made for those who have had no Greek before coming to the University.

Courses 2, 3, 4, 5 and 17 constitute the minimum requirement for the high school teacher's recommendation in Greek.

1. Elementary.—Grammar; translation of easy prose; Greek composition. After the essential grammatical forms have been mastered, passages of continuous prose are taken up for translation, and, as soon as is practicable, the Anabasis. The student is made familiar with the ordinary forms of syntax, and exercises in writing Greek are regularly introduced. This course does not count as a part of the major work for students in Greek.

5 hrs., both semesters (Rolfe)

2. Plato and Lysias.—The Apology and Crito, and selections from Lysias. Course 2 is open to those who have offered subject 22 on entrance, or who have completed course 1 in the University.

3 hrs., 1st semester (Elmore)

3. Herodotus and Homer.—A continuation of course 2. Selections from Herodotus and the Odyssey.

1 hr., 2d semester (Rolfe)

4. Prose Composition and Sight Translation.—Simple prose is taken up for sight reading, and the exercises are based upon the text read. Course 4 is required of all students in courses 2 and 3 who are making Greek their major study.

2 hrs., both semesters (Martin, Elmore)

5. Syntax.—Lectures and exercises on Greek syntax, treated from a practical rather than a theoretical standpoint.

1 hr., 1st semester (Murray)

6. Geography.—Lectures and exercises on the geography of the Greek world and the geographical ideas of the Greeks from the earliest times. [Course 6 will not be given in 1905-06.]

1 hr., 2d semester (Rolfe)

7. Homer.—A critical study of the Iliad, with discussions and papers on Homeric topics. Open to those who have completed courses 2 and 3, or an equivalent.

3 hrs., 1st semester (Murray)

8. Oratory.—Jebb's Selections from the Attic Orators, with lectures. A continuation of course 7.

3 hrs., 2d semester (Martin)

9. Prose Composition and Sight Translation.—Selections for translation are made from the historical and philosophical writers. A variety of practical exercises in Greek composition are prepared, according to the needs of the class. Open only to those who have completed course 4, or an equivalent, but required of major students before graduation.

2 hrs., both semesters (Foster, Fairclough)

10. History of Greece.—A general outline course, with a brief preliminary survey of the Oriental civilizations. Open to all students. After 1905-06 this course will be given in alternation with courses 11 and 12 and with the corresponding course in the History of Rome. 2 hrs., both semesters (Rolfe)

11. Greek Religion, Mythology, and Ritual.—Lectures, illustrated by stereopticon. 2 hrs., 1st semester (Rolfe)

12. Greek Art.—With especial reference to Sculpture and Vase Paintings. Lectures, illustrated by stereopticon. [Courses 11 and 12 will not be given in 1905-06.]

2 hrs., 2d semester (Rolfe)

13. Private Life of the Greeks.—Lectures, illustrated by stereopticon. 2 hrs., 2d semester (Martin)

14. Greek Tragedy.—The Prometheus of Aeschylus, the Antigone and Electra of Sophocles, and the Hippolytus and Iphigenia Taurica of Euripides are read and interpreted. Other plays are assigned for private study, and lectures on the drama are from time to time given. 3 hrs., both semesters (MURRAY)

15. Plato and Demosthenes.—The Phædo and the De Corona are read and interpreted. 3 hrs., 1st semester (ROLFE)

16. Thucydides.—Books VI and VII, the Sicilian Expedition. [Courses 15 and 16, alternating with course 14, will not be given in 1905-06.] 3 hrs., 2d semester (ROLFE)

17. Teachers' Course.—Lectures and practical exercises. 2 hrs., 2d semester (MURRAY)

18. Bucolic Poetry.—Selected idylls of Theocritus, Bion, and Moschus and the Eclogues of Vergil are read and interpreted. [Students completing this course will receive 1 hr. credit in each department.] [Course 18 will not be given in 1905-06. See course 21.] 2 hrs., 2d semester (MURRAY)

19. Lyric Poetry.—Readings and lectures. [Course 19 will not be give in 1905-06.] 2 hrs., 2d semester (FAIRCLOUGH)

GRADUATE COURSES

The center of the Graduate work is the Greek Seminary—made up of the director and such students as satisfy him of their fitness for the work. The Seminary meets weekly for the critical interpretation of some Greek author, the different members, in turn, filling the post of interpreter. Topics for investigation are assigned, and papers prepared by the members are read and discussed.

Members of the Seminary are expected to supplement their critical work by wide reading, and lectures on the author or authors under discussion are given by the director. It is in the highest degree desirable that all members of the Seminary should be able to read both French and German.

20. The Greek Seminary.—In 1905-06 the Seminary will be occupied with the study of the Bucolic poets. Selected Idylls of Theocritus will be taken up for interpretation, and lectures by the director will accompany the work of the Seminary. Students should provide themselves in advance with the editions of Theocritus by Cholmeley (George Bell & Sons, 1901) and by Ziegler (Tübingen, 1879). Texts of Bion, Moschus, Callimachus, and

of Apollonius Rhodius (the last in the Oxford Series) should also be in the hands of all.

2 hrs., both semesters (Murray)

21. Alexandrian Poetry.—Graduate and advanced students will meet weekly for the reading of the Alexandrian Poets. Lectures by the director of the Seminary will accompany the reading.

1 hr., both semesters (Murray)

Special Lectures

Throughout the year Professor Murray gives lectures twice weekly, on Greek Epic and Dramatic Poetry. These lectures are intended for general literary students, and do not presuppose a knowledge of Greek; they will not count as a part of the major work for students in Greek.

22. The Greek Epic. 2 hrs., 1st semester (Murray)

23. Greek Tragedy. 2 hrs., 2d semester (Murray)

LATIN

Henry Rushton Fairclough, Professor.
Jefferson Elmore, Assistant Professor.
Benjamin Oliver Foster, Ernest Whitney Martin, Instructors.

With the co-operation of Professor Murray and Associate Professor Rolfe of the Department of Greek.

Undergraduate Courses

The aim of the undergraduate courses in Latin is to give the student a somewhat systematic knowledge of the language and its development, an acquaintance with the representative authors of Latin literature, and some insight into the life, culture, and civilization of ancient Rome.

Students who complete twenty hours of the work accepted as part of the major requirements in Latin, including two courses of Prose composition, and in addition the Teachers' Course in Latin, may receive a recommendation from the Department to teach Latin as a minor subject.

1. Vergil and Cicero.—Vergil, selected books of the Æneid; Cicero, selected orations; exercises in Latin composition. This

course is planned for those who have passed in entrance subject 21*a*. Course 1 does not count as major work for students in Latin. 3 hrs., both semesters (MARTIN)

2. Terence, Cicero, and Horace.—Terence, Andria; Cicero, De Senectute; Horace, Odes and Epodes.

Open to students who have completed course 1, or who have offered subject 21*b* on entrance. Three sections.

3 hrs., both semesters (ELMORE, FOSTER, MARTIN, MURRAY)

3. Terence, and Selections, illustrative of Roman life.—A reading course, intended mainly for students who have not taken course 2 in the first semester. 3 hrs., 2d semester (MARTIN)

4. Prose Composition I.—Open to those taking course 2, and required of all major students in Latin. The work in composition is accompanied by a study of Cæsar, Civil War, Selections from Phædrus, and Cicero, Scipio's Dream.

2 hrs., both semesters (MARTIN)

5. Horace.—Satires and Epistles. Open to those who have completed course 2 or 3. Attention will be directed especially to the style and subject matter, to Horace's influence upon later literature, and to the salient features of the Augustan age.

3 hrs., 1st semester (FAIRCLOUGH)

6. Livy and Tacitus.—Selections from Livy's History and the Annals of Tacitus. This course, complementary to course 5, will involve a survey of Roman history and the literature of the early empire. 3 hrs., 2d semester (ELMORE)

7. Prose Composition II.—Open to students who have taken course 4. In addition to the work in composition, the class will read the Jugurtha and Catiline of Sallust and the Agricola of Tacitus. Exercises for translation into Latin will be prepared to suit the needs of the class.

2 hrs., both semesters (ELMORE)

8. Plautus.—In this course the Rudens of Plautus will be studied with particular reference to the early forms, constructions, and meters; and that followed by the more rapid reading of the Captivi and Menæchmi. Considerable attention will be paid to a comparison between ancient and modern comedy, the development of Latin comedy, the early theatre, and the method of presenting a play. 2 hrs., 1st semester (FOSTER)

9. The Letters of Cicero.—The aim will be to get a view of Cicero and his times from the original sources, to ascertain the causes for the breaking down of the Republic, and to become familiar with official procedure in the judicial and legislative bodies. Special attention will be paid to the style of the letters.
2 hrs., 2d semester (Foster)

10. Suetonius and Pliny.—Selections from the Biographies of Suetonius and the Letters of Pliny.
2 hrs., 1st semester (Foster)

11. Catullus, Tibullus, and Propertius.—Selections from these authors will be studied, largely with reference to the thought and artistic form, and compared with similar poems of other writers.
2 hrs., 2d semester (Fairclough)

12. Lucretius.—Selections from the De Rerum Natura will be read with particular attention to the philosophic thought and its poetic treatment. 2 hrs., 1st semester (Rolfe)

13. Prose Composition III.—A course for third-year students.
1 hr., both semesters (Fairclough)

14. Juvenal and Martial.—Selections from the Satires of Juvenal and the Epigrams of Martial with supplementary reading in other writers of the first century.
2 hrs., 1st semester (Elmore)

15. Quintilian and Cicero.—Book X, with selections from Cicero, De Oratore. Rhetoric and literary criticism among the Romans. 2 hrs., 2d semester (Foster)

16. Prose Composition IV.—Translations from English authors. For advanced students.
1 hr., both semesters (Fairclough)

17. Teachers' Course.—Lectures on methods of teaching Latin with practical exercises. Open only to advanced students.
2 hrs., 2d semester (Fairclough)

18. Roman Law.—This course, based upon the Commentaries of Gaius, will deal with the leading principles and history of Roman Law, and its survival in modern times. Open to all who have some knowledge of Latin, and intended especially for students in Law. 2 hrs., 1st semester (Fairclough)

19. History of Roman Literature.—A survey of the subject with assigned readings. Intended especially for major students in Latin. 2 hrs., 2d semester (Rolfe)

20. Roman History from original sources.—A careful study of a selected period. [Not given in 1905-06.]
2 hrs., 2d semester (FOSTER)

21. The Roman Novel.—The Cena Trimalchionis of Petronius, and the story of Cupid and Psyche from the Golden Ass of Apuleius. 2 hrs., 2d semester (FOSTER)

GRADUATE COURSES

These courses are open to graduates in Latin, who have had at least two years' undergraduate work in Greek. The ability to read French and German is also very desirable, and, in the case of candidates for the degree of Ph. D., necessary. The aim of the courses is to give the student a thorough grasp and detailed knowledge of particular authors, and of certain periods and fields of literary activity, as well as a training in literary criticism, and an acquaintance with the methods of original research.

22. Latin Seminary.—In 1905-06 the Seminary will be devoted to Vergil, especially the Bucolics and Æneid. The latter will be studied in its entirety as a work of art, and selected passages in the first six books will be interpreted. Attention will be paid to Vergil's influence on mediæval and modern literature. The course will be of special importance to teachers of Latin. Students should provide themselves in advance with a complete text of Vergil, such as that in the Oxford or Teubner series.
2 hrs., both semesters (FAIRCLOUGH)

23. Reading.—A careful reading of the text of Vergil in connection with the Seminary work.
2 hrs., 1st semester (FAIRCLOUGH)

24. Introduction to Latin Palæography.—Lectures and practice in reading fac-similes of manuscripts.
1 hr., 1st semester (FAIRCLOUGH)

25. Introduction to Latin Epigraphy.—Lectures and readings in the Corpus Inscriptionum. 1 hr., 2d semester (MARTIN)

26. Historical Grammar.—Lectures on the sounds and inflections of Latin. 2 hrs., 1st semester (FOSTER)

27. The Elements of Oscan and Umbrian.—The study of the grammar will be accompanied by a reading of the more important inscriptions. 2 hrs., 2d semester (FOSTER)

28. History of Classical Philology.—Lectures.
1 hr., 1st semester (ELMORE)

Special Courses

29. History of Rome.—A general course, open to all students. 3 hrs., both semesters (Rolfe)

30. Roman Poets.—Selections in translation, with lectures and prescribed reading. This course is intended for general literary students. [Not given in 1905-06.]
2 hrs., 1st semester (Fairclough)

31. Roman Art and Monuments.—A survey of the topography, architecture, sculpture, and other art-forms of ancient Rome and the provinces, illustrated with lantern-slides. This course is open only to students who have some knowledge of Roman history.
2 hrs., 2d semester (Fairclough)

32. Roman Private Life.—Lectures, with illustrations from ancient art and other sources. Open to all, but of special importance to Latin students. 2 hrs., 1st semester (Martin)

33. Roman Political Institutions.—Lectures and assigned reading on the development and operation of the most important features of the Roman government. Open to all students.
2 hrs., 2d semester (Elmore)

GERMANIC LANGUAGES

Julius Goebel, James Owen Griffin, Professors.
Karl G. Rendtorff, William Alpha Cooper, Assistant Professors.
Charles Frederick Schmutzler, Instructor.

The aim of the elementary classes in this department is to give the student a thorough knowledge of German grammar and to enable him to acquire facility in reading German. The more advanced classes take up the study of the poets and writers of the different periods, and it is intended to offer, by the reading and interpretation of these authors, an equivalent for the study of the ancient languages to those not taking Latin or Greek in their University course.

Students who intend to engage in preparatory teaching of German are expected to include courses 7, 8, 10, 11, 12, 14, and 15.

1. Elementary.—German Grammar and German Reader; German Composition; translation of easy prose and poetry. Course

1 is intended for those beginning the study of the language. Three five-hour sections and one three-hour section. Students who have had training in Latin, and students who have some knowledge of German, but not sufficient to enable them to pass in entrance subject 20*a*, will be admitted to the three-hour section.

3 and 5 hrs., both semesters (GRIFFIN, COOPER, SCHMUTZLER)

2a. Second-Year German.—Schiller's Maria Stuart and Goethe's Prosa. [In 1905-06 Lessing's Minna von Barnhelm and Heine's Prosa.] Advanced grammar and composition, translation at sight. Open to students who have completed course 1 or its equivalent, or who have received credit for entrance subject 20*a*.

3 hrs., both semesters (GRIFFIN, COOPER, SCHMUTZLER)

2b. Rapid Reading.—The rapid translation of modern German prose; writing of German from dictation; paraphrasing of the German text. This course should be taken in connection with course 2*a*, which it is intended to supplement. So far as is consistent with a thorough understanding of the work, the course will be conducted in German.

2 hrs., both semesters (GRIFFIN, COOPER)

3. Advanced German Grammar.—This course, intended primarily for those who have had German 1 and 2, or their equivalent, but lack a thorough knowledge of the grammar, will consist of a review of the sounds, inflections, and the elements of syntax, with special emphasis on the history of the sounds and the corresponding sounds in English, word-formation (roots, formative elements, derivation by ablaut, prefix, suffix, compounds), and idioms. Lectures and practical exercises, conducted as far as practicable in German. 2 hrs., both semesters (COOPER)

4. Modern German Drama.—Lectures in connection with the interpretation and rapid reading of some of the more important works of the modern dramatists, Heyse, Wilbrant Sudermann, Hauptmann, Wildenbruch, etc.

2 hrs., both semesters (GRIFFIN)

5. Third-Year German.—Goethe's Iphigenie and Schiller's Wallenstein. [In 1904-05 Lessing was studied during the first semester. The second semester was devoted to the study of Goethe's Tasso.] During both semesters one hour of this course is given to the reading of literary, scientific, and historical German prose. 3 hrs., both semesters (RENDTORFF)

6. Modern German Novels.—Cursory reading of standard modern novels. 2 hrs., both semesters (RENDTORFF)

7a. German Composition.—Translation of graded exercises covering the most important parts of German syntax.
2 hrs., both semesters (COOPER)

7b. Deutsche Stilübungen.—Writing of essays in German. The class will be conducted in German.
2 hrs., both semesters (RENDTORFF)

8. Syntax.—Selected chapters of German syntax. Open to students who have completed course 7, or its equivalent.
1 hr., both semesters (RENDTORFF)

9. History of German Civilization.—This course is intended for students of German who wish to become acquainted with German history and the development of German civilization in their relation to German literature.
2 hrs., both semesters (RENDTORFF)

10. Teachers' Course.—This course is intended for students who expect to become teachers of elementary German. Lectures and exercises. Open to advanced students only.
2 hrs., 1st semester (GOEBEL)

11. Goethe.—Goethe's Faust, First and Second Parts. Interpretation with lectures on the development of the Faust legend, the history of Goethe's Faust, and its philosophical and ethical ideas. [In 1905-06 Goethe's and Schiller's lyrics.]
2 hrs., both semesters (GOEBEL)

12a. History of German Literature from the Earliest Times to the Reformation. 2 hrs., both semesters (RENDTORFF)

12b. History of German Literature During the Eighteenth Century.—Lectures and Readings.
2 hrs., both semesters (GOEBEL.)

12c. History of German Literature During the Nineteenth Century.—The lectures will be given in German. [Not given in 1904-05.] 2 hrs., both semesters (RENDTORFF)

13. Poetics.—Lectures on the psychology and æsthetics of poetry as the basis for literary criticism. Comparative study of the principal theories of lyric, epic, and dramatic poetry from Aristotle to the present time. This course is open to all students of literature. [Not given in 1905-06.]
2 hrs., 2d semester (GOEBEL)

Graduate Courses

The graduate courses in German, for which a thorough linguistic preparation is required, are intended especially for students who will make the teaching of German their later profession. Careful attention is given to the linguistic as well as to the literary training of the student, aiming at a comprehensive insight into the historical growth of the Germanic languages and literatures. The scientific methods of original and critical research are taught and practiced in the seminary. Such students as have given satisfactory proof of their ability as independent investigators will be admitted to the degree of Doctor of Philosophy, upon fulfilling the general requirements prescribed by the University.

Library facilities include the extensive library of the late Professor Hildebrand of Leipzig, which offers, on account of the rare completeness of the collection in all branches of German philology and literature, extraordinary opportunities for graduate work in German.

14. Middle-High German.—Middle-High German Grammar, with readings from Weinhold's Lesebuch.
2 hrs., 1st semester (Goebel)

15. Walther von der Vogelweide.—[In 1905-06 the Gudrun will be interpreted.] 2 hrs., 2d semester (Goebel)

16. Old-High German and Old Saxon.—Old-High German and Old Saxon Grammar, with readings from Braune's Lesebuch.
2 hrs., 1st semester (Goebel)

17. Heliand.—Interpretation and lectures.
2 hrs., 2d semester (Goebel)

[Courses 16 and 17 will not be given in 1905-06.]

18. Old Norse.—Old Norse Grammar, with readings of Old Norse prose texts. (Holthausen's Lesebuch.)
2 hrs., 1st semester (Goebel)

19. Edda.—Interpretation of the heroic lays of the older Edda in their relation to the Nibelungenlied.
2 hrs., 2d semester (Goebel)

20. Gothic.—Gothic Grammar and interpretation of select passages from Wulfila. 2 hrs., 2d semester (Goebel)

21. Comparative German Grammar.—Lectures on the comparative grammar of the Old Germanic dialects.

2 hrs., 2d semester (GOEBEL)

22. German Seminary.—In 1904-05 the work of the German Seminary was devoted to the study of the philosophic essays and poems of Schiller. [In 1905-06 a special study will be made of the German Romantic School.]

2 hrs., both semesters (GOEBEL)

ROMANIC LANGUAGES

JOHN ERNST MATZKE, Professor.
OLIVER MARTIN JOHNSTON, Associate Professor.
COLBERT SEARLES, CARL COSMO RICE, Assistant Professors.
STANLEY SMITH, Instructor.

The undergraduate courses in the Romanic Languages are planned so as to give students an intimate acquaintance with the modern forms of the languages spoken in the principal neo-latin countries. To this end systematic attention is paid to pronunciation, reading, syntax, and conversation. In the higher courses special emphasis is laid on the study of the literature of these countries. In order to give students an opportunity to become familiar with the spoken idioms, several of the advanced courses are conducted as much as possible in the language which forms the object of study.

Students will have the opportunity of selecting either French or Spanish as their major subject. In French a minimum of twenty-eight hours will be required for graduation, consisting of courses 2, 3, 4, 5, 6, 7, 8, and 9. In Spanish a similar requirement will include courses 10, 11, 12, 13, 14, 15, 16, and 17.

The minimum requirement for the high school recommendation is as follows:—In French: courses 2, 3, 4, 5, 8, 20, 21; in Spanish: courses 10, 11, 12, 13, 14, 16.

1. Elementary French.—Fraser and Squair's French Grammar and Reader, with written and oral exercises and systematic training in French pronunciation on the basis of Matzke's Primer of French pronunciation; Aldrich and Foster's French Reader; Halévy, L'Abbé Constantin. Open to all, but students desiring to enter after the end of the second week will be admitted only upon special examination. 3 hrs., both semesters

(SEARLES, RICE, JOHNSTON, MATZKE)

2. Modern French Syntax.—Fraser and Squair, French Grammar. Open to students who have completed course 1, or who have received credit for entrance subject 19*a*.

2 hrs., both semesters (Searles, Johnston)

3. Modern French Reading.—Mérimée, Colomba; Daudet, Tartarin de Tarascon; Balzac, Eugénie Grandet; Hugo, Hernani; Rostand, Cyrano de Bergerac. Open to students who have completed course 1, or who have received credit for entrance subject 19*a*.

The section meeting at 9:15 will be open only to students selecting course 2, or having completed it, and will be devoted to more special study of syntax in connection with the reading. The remaining sections are intended to give general opportunity for obtaining a more perfect reading knowledge of the language.

2 hrs., both semesters (Searles, Rice)

4. French Conversation.—There will be three meetings of the class during the week, but no particular preparation will be required, and only one hour of credit will be given toward graduation. Open to students who have completed course 1, or who have received credit for entrance subject 19*a*.

1 hr., both semesters (Johnston, Rice)

[Courses 2, 3, and 4 constitute the second year's work in French, and should, if possible, be taken during the same year. Course 4 may not precede course 2.]

5. Classical French.—A study of the principal authors of the classical period. The following texts will be read: Corneille, Le Cid, Horace, Cinna; Racine, Adromaque, Athalie; Molière, Les Précieuses Ridicules, Tartuffe, Le Bourgeois Gentilhomme; Voltaire, Zaïre; La Fontaine, Fables; Boileau, L'Art Poétique. Lectures on the development of French Literature in the seventeenth century. Open to students who have completed courses 2 and 3, or their equivalent.

3 hrs., both semesters (Johnston)

6. History of French Literature from the Renaissance to the Romantic Movement.—Lectures in French, supplemented by reading and reports by the members of the class. Open to students who have completed courses 2, 3, and 4, or their equivalent.

2 hrs., both semesters (Rice)

7. History of French Literature in the Nineteenth Century.—Lectures, with reading of the principal authors and reports by the members of the class. Students should provide themselves

with Pellissier, Le mouvement littéraire au XIXe siècle (Paris, Hachette, 1889). Open to students who have completed courses 5 or 6. 2 hrs., both semesters (MATZKE)

8. Advanced French Prose Composition.—Translation into French of selected English prose. Open to students who have completed course 2, or its equivalent.
1 hr., both semesters (RICE)

9. French Themes.—The course will be conducted entirely in French. Open to students who have completed courses 2, 3, and 4, or their equivalent. 1 hr., both semesters (RICE)

10. Elementary Spanish.—Hills and Ford, A Spanish Grammar; Matzke, First Spanish Readings; Valdéz, José. Open to all. 3 hrs., both semesters (SMITH)

11. Modern Spanish Syntax.—Ramsey, A Text-book of Modern Spanish. Open to students who have completed course 10, or who have received credit for entrance subject 18*a*.
2 hrs., both semesters (SMITH)

12. Modern Spanish Reading.—Tamayo y Baus, Un Drama Nuevo; Galdós Marianela; Caballero, La Familia de Alvareda; Moratin, El Sí de las Niñas; Zorilla, Don Juan Tenorio. Open to students who have completed course 10, or who have received credit for entrance subject 18*a*.
2 hrs., both semesters (SEARLES)

13. Spanish Conversation.—There will be three meetings of the class during the week, but no particular work will be required in preparation and only one hour of credit will be given toward graduation. Open to students who have completed course 10, or its equivalent. 1 hr., both semesters (———)

[Courses 11, 12, and 13 constitute the second year's work in Spanish, and should, if possible, be taken during the same year. Course 13 may not precede course 11.]

14. Classical Spanish.—Cervantes, Don Quijote; Lope de Vega, La Estrella de Sevilla; Calderón, La Vida es Sueño, and El Mágico Prodigioso; Téllez, Don Gil de las Calzas Verdes; Moreto, El Desdén con el Desdén; Ford, A Spanish Anthology. Open to students who have completed courses 11 and 12.
2 hrs., both semesters (MATZKE)

15. Advanced Spanish Composition.—Ramsey and Lewis, Progressive Exercises in Spanish Prose Composition. Open to students who have completed course 11, or its equivalent.
1 hr., both semesters (———)

16. Spanish Themes.—The course will be conducted entirely in Spanish. Open to students who have completed courses 11, 12, and 13, or their equivalent.

1 hr., both semesters (———)

17. History of Spanish Literature.—Lectures, with reading of important works and reports by the members of the class. Students should provide themselves with Butler Clarke's Spanish Literature (Macmillan & Co., New York). Open to students who have completed course 14, or its equivalent.

3 hrs., both semesters (———)

18. Elementary Italian.—Young, An Italian Grammar; Bowen's First Italian Readings; Manzoni, I Promessi Sposi. Open to students who have completed French, course 1, or Spanish 10, or who have received credit for entrance subject 18*a* or 19*a*. 3 hrs., both semesters (JOHNSTON)

19. Advanced Italian.—Dante, La Divina Commedia. Open to students who have completed course 18.

2 hrs., both semesters (JOHNSTON)

TEACHERS' COURSES

20. Phonetics.—Lectures on the organs of speech and the nature and formation of speech sounds with special reference to the pronunciation of French. Intended particularly for teachers of language. Open only to advanced students.

2 hrs., 1st semester (MATZKE)

21. Teachers' Course in French.—Lectures on methods of teaching French, study of the available text-books and practical exercises in teaching French. Open only to advanced students.

2 hrs., 2d semester (MATZKE)

[Courses 20 and 21 are given in alternate years; they will be given in 1905-06.]

GRADUATE COURSES

Courses of instruction for graduate students in Romanic philology and literature lead to the degrees of Master of Arts and Doctor of Philosophy and are planned for the benefit of specialists, particularly of such as are intending to become teachers of the Romanic languages. Admission to regular standing in this department presupposes an undergraduate curriculum of study which has included Latin and French, and has afforded proficiency in at least one of the principal languages of the Ro-

manic group (French, Spanish, or Italian). In addition to this, a good reading knowledge of German (for purposes of advanced study) is requisite.

22. History of Old French Literature.—Lectures on the history and development of French Literature from the beginning to the end of the fifteenth century.

2 hrs., both semesters (MATZKE)

23. French Historical Grammar.—Lectures on Old French Phonology and Morphology. Students should provide themselves with Schwan-Behrens, Grammaire de l'Ancien Francais, traduction de Bloc (Leipzig, Reisland, 1900), Suchier, Altfranzösische Grammatik (Halle, Niemeyer, 1893), Körting, Lateinisch-Romanisches Wörtebuch (Schöningh, Paderborn, 1901). One hour every week will be given up to practical philological exercises based on Paris's edition of La Vie de Saint Alexis (Paris, Vieweg, 1903), and Suchier's edition of Aucassin et Nicolete (Schöningh, Paderborn, 1899). 3 hrs., both semesters (MATZKE)

24. Old French Texts.—Translation of Old French texts from Bartsch, Chrestomathie de l'Ancien Francais, revue par Horning (Leipzig, Vogel, 1901). 2 hrs., both semesters (JOHNSTON)

25. Old French Syntax.—Lectures.

1 hr., both semesters (JOHNSTON)

26. Old French Dialects.—Lectures and practical exercises. [Course 26 will not be given during 1905-06.]

2 hrs., both semesters (MATZKE)

27. Old Spanish.—Old Spanish Grammar with readings from Gorra, Lingua e Letteratura Spagnuola delle origini (Hoepli, Milan, 1898). [Course 27 will not be given during 1905-06.]

2 hrs., both semesters (———)

28. History of the Spanish Theatre.—Lectures. [Course 28 will not be given during 1905-06.]

1 hr., both semesters (MATZKE)

29. Seminary.—In 1904-05 the Seminary was occupied with the study of Chrétien de Troyes.

2 hrs., both semesters (MATZKE)

30. Journal Club.—The instructors in the department and the advanced students meet regularly on alternate Thursdays for the discussion of the periodicals and new books.

ENGLISH LITERATURE AND RHETORIC

Melville Best Anderson, Professor.
Alphonso Gerald Newcomer, Associate Professor.
Raymond Macdonald Alden, Samuel Swayze Seward, Jr., Assistant Professors.
Lee Emerson Bassett, Howard Judson Hall, John Kester Bonnell, Francis Harding White, Instructors.

Requirements for the Degree of Bachelor of Arts

a. The courses in Chaucer, Shakspere, Milton, the Literature of the Eighteenth Century, the History of English Literature to the time of Dryden, besides such preliminary and other courses as may be requisite in each individual case.

b. Acquaintance with good usage in speech and the ability to write printable English.

c. A sound knowledge of at least one foreign language and its literature.

Teachers' Recommendation in English

Besides fulfilling the major requirements for the degree of Bachelor of Arts, students who desire the recommendation of the department as teachers of English will be expected to take courses in Vocal Expression, Anglo-Saxon and Linguistic History, Versification, the Literature of the Nineteenth Century, the Teachers' Course in English, English and American History, and some branch of Biology (Physiology preferred). No candidate who is unable to give a satisfactory vocal interpretation of a piece of literature will receive the recommendation of the Department.

The minimum requirement for the teachers' recommendation, with English as a minor subject, is as follows: Vocal Expression (4 hrs.); Composition (4 hrs.); Shakspere (3 hrs.); Milton (3 hrs.); Chaucer (3 hrs.); 18th Century Literature (3 hrs.); 19th Century Literature (3 hrs.); Teachers' English or Anglo-Saxon (3 hrs.).

Undergraduate Courses

1. Principles of Vocal Expression.—A general course in vocal training, the use of the voice in reading and speaking, and the elements of interpretative reading, with practice in the preparation and delivery of short speeches. Open to all.
2 hrs., both semesters (Bassett)

2. Vocal Training.—A study of the action of the imagination in the vocal interpretation of literature. Open to all who have passed in course 1. 2 hrs., 1st semester (Bassett)

3. Vocal Interpretation of Literature, based on studies in Shakspere, Browning, and Tennyson. Open to all who have passed in courses 1 and 2. 2 hrs., 2d semester (BASSETT)

4. Public Speaking.—Practice in the preparation and delivery of speeches, with a study of masterpieces of oratory. Open to all who have passed in courses 1 and 8.
2 hrs., 2d semester (BASSETT)

5. Introduction to Prose.—A general course, in which a few works of writers like Johnson, Lamb, De Quincey, Macaulay, Emerson, and Poe, are studied with special reference to the qualities and varieties of prose style. Open to first and second year students of all departments; to third and fourth year students by special permission only.
3 hrs., 1st semester (NEWCOMER, HALL, BONNELL, WHITE)

6. Introduction to Poetry.—Similar to course 5, with a substitution of the modern poets, a study of the nature, methods, and varieties of poetry, the elements of poetic form, and the elements of poetic criticism. Open upon the same conditions.
3 hrs., 2d semester (NEWCOMER, HALL, BONNELL, WHITE)

5-6. Introduction to Prose and Poetry.—A combination of the two courses above, intended for students entering the second semester. 5 hrs., 2d semester (———)

7. Exposition.—An advanced course open to a limited number of students who have passed in course 8.
2 hrs., 2d semester (HALL)

8. English Composition.—Narration, description, and exposition. Open to second-year students who have passed in entrance subject 1.
2 hrs., both semesters (SEWARD, HALL, BONNELL, WHITE)

9. Exposition and Argument.—Practice in the preparation and presentation of material in expository and argumentative form, with some study of models. Open to a limited number of students who have passed in course 8.
2 hrs., 1st semester (ALDEN)

10. Oral Debate.—Practice in the preparation and delivery of oral arguments, chiefly on current public questions. The work of the debater is criticised by the instructors, with reference to the gathering and handling of material, structure and

style, and delivery. Open to a limited number of students, and in general only to those taking, or having taken, course 9.

2 hrs., both semesters (Alden, Duniway, Bassett)

11. Narration.—The principles of invention and the philosophy of style in their practical application to narrative art. Open by recommendation from course 8.

1 hr., both semesters (Seward)

12. Teachers' Course in English.—Intended primarily for advanced students of English and for such others as satisfy the instructor of their fitness.

2 hrs., both semesters (Seward)

13. Prosody.—A study of the principles and history of English versification. Open to English students in the third and fourth years. 2 hrs., 2d semester (Alden)

14. Essayists of the Nineteeth Century.—Lectures upon Carlyle, Ruskin, and Arnold, with assigned reading. A partial credit course, open to all students after their first year. English students desiring three hours' credit for the work will register for course 27 also and be assigned a topic for a thesis.

3 hrs., lectures (2 hrs. credit), 1st semester (Newcomer)

16. Early English Drama.—English dramatic literature from its origin to Shakspere's immediate predecessors. Open to English students in the third and fourth years; to others by permission. 2 hrs., 2d semester (Seward)

18. English Literature from 1660 to 1798.—The age of Dryden and the age of Pope (first semester); the age of Johnson and the early romantic revival (second semester). Open to students who have taken courses 5, 6, and 8 (preferably also 14), or their equivalent. [Not to be given in 1905-06.]

3 hrs., both semesters (Alden)

19. Representative English Poets of the Nineteenth Century.—*a.* Keats, Arnold, Rossetti, Morris, Swinburne (first semester). *b.* Tennyson (second semester). Lectures, discussions, and weekly papers. Open to English students in the third and fourth years; to others by permission. [Not to be given in 1905-06.]

3 hrs., both semesters (Newcomer)

20. English Literature from 1798 to 1832.—The age of Coleridge, Byron, Scott, and the Reviewers. Open to students of all departments in the third and fourth years.

2 hrs., 1st semester (Alden)

21. American Literature.—A survey of American literary history; lectures and reports. Students are expected to possess the works of the chief poets, especially Bryant, Poe, Longfellow, Whittier, Emerson, Lowell, Whitman, and Lanier. Open to those who have taken courses 5, 6, and 8, or their equivalent. 3 hrs., both semesters (———)

22. Wordsworth and Shelley.—Lectures and interpretations. Open to students of all departments in the third and fourth years. [The Globe edition of Wordsworth, the Cambridge edition of Shelley.] 1 hr., both semesters (ANDERSON)

23. Milton.—*a.* In 1904: The Early Poems, Paradise Regained, Samson Agonistes. *b.* In 1906: Paradise Lost.

Open to students of English in the third and fourth years; to students of other departments in the fourth year; to others only by permission. [Not to be given in 1905-06.]

3 hrs., 1st semester (ANDERSON)

24. Shakspere: Introductory Course.—Lectures. The student is expected to read a considerable number of the plays and poems. Open to students of English in the third and fourth years; to students of other departments in the fourth year; to others only by permission. [Not to be given in 1905-06.]

3 hrs., 1st semester (ANDERSON)

25. Shakspere: Advanced Course.—Groups of plays are read in successive years, as indicated below. The student may elect any one or more of these groups. The plays in each group are selected with a view to the illustration of the scope and variety of the author's powers and of the development of his art.

a. 1905: A Midsummer-Night's Dream, Romeo and Juliet, Twelfth Night, King Lear, Coriolanus.

b. 1906: Love's Labor's Lost, As You Like It, Hamlet, Antony and Cleopatra, The Tempest.

c. 1907: Henry IV, Parts I and II, Henry V, The Merchant of Venice, Othello, The Winter's Tale.

d. 1908: The Comedy of Errors, The Merry Wives of Windsor, Much Ado About Nothing, Julius Cæsar, Macbeth, Cymbeline.

Open to those who have passed in course 24; to others only by permission. 3 hrs., 2d semester (ANDERSON)

26. The History of English Literature from Spenser to Milton.—Lectures. (A continuation of course 3, English Philol-

ogy.) Open to students of English in the fourth year; to others only by permission. 2 hrs., both semesters (ANDERSON)

27. Thesis.—In connection with the more advanced courses in literature the student may, by special permission of the instructor, undertake a piece of research, the results of which shall be embodied in a thesis.

1 hr., either semester (ANDERSON, NEWCOMER, ALDEN)

GRADUATE COURSES

The preliminary requirements for entrance upon a course for an advanced degree in English are:

a. The course for the degree of A. B. in English, or its equivalent.

b. An elementary knowledge of Anglo-Saxon.

c. A sound knowledge of two foreign languages (preferably one ancient and one modern language).

28. The Development of English Prose, from the middle of the sixteenth century to the end of the eighteenth. In 1905, fall semester, study will be concentrated upon the period from Lyly and Sidney to Milton.

2 to 3 hrs., 1st semester (NEWCOMER)

29. Textual Criticism and Interpretation. –In 1904-05 Shakspere's King Lear was examined upon the basis of Furness' Variorum edition and Victor's reprint of the original texts. [In 1905-06 not to be given in the first semester. In the second semester, a study will be made of the later manner of Shakspere (The Tempest, The Winter's Tale, Cymbeline)].

2 or 3 hrs., both semesters (ANDERSON)

30. Literary Criticism. –The history of English literary criticism, from the Elizabethan age to that of Matthew Arnold. [Not to be given in 1905-06.] 2 hrs., both semesters (ALDEN)

31. Lyric and Epic.—Studies in the lyric as a poetic form, and its development in England to the seventeenth century (first semester). Similar studies in epic poetry (second semester).

2 hrs., both semesters (ALDEN)

The work in courses 30 and 31 consists of lectures and seminary reports. These courses will ordinarily be given in alternate years.

ENGLISH PHILOLOGY

*Ewald Flügel, Professor.

Raymond Macdonald Alden, Samuel Swayze Seward, Jr., Assistant Professors (Department of English Literature).

Edward Kirby Putnam, Instructor.

1. Anglo-Saxon.—*a.* Anglo-Saxon Grammar and translation of select passages in prose (first semester). *b.* Translation of select passages in verse; outline of Historical English Grammar (second semester).

3 hrs., both semesters (Seward, Alden)

2. Chaucer.—This course is an elementary one, and includes an outline of Middle English Grammar for the beginner. Open to third-year students. 2 hrs., 1st semester (Putnam)

BIBLICAL HISTORY AND LITERATURE

David Charles Gardner, Charles Reynolds Brown, Jacob Voorsanger, Lecturers.

1. Life and Teaching of Christ.—The history of the life and times of Jesus, with a study of his words as recorded in the gospels and the application of his teaching to the life of to-day. Lectures, discussions, and papers, with a study of the religious forces in modern society.

1 hr., both semesters (Gardner)

2. The Life and Literature of the Early Hebrews.—A study of the historical, poetical, didactic, and prophetic books of the Old Testament according to modern literary methods. The limits of the course do not permit the discussion of technical questions of analysis, but students are instructed in the methods of modern Biblical study and in the results of recent scholarship in determining the processes which entered into the composition of this literature. The bearing of these results on the moral and religious life of our own time is naturally considered. The lectures are supplemented by a certain amount of suggested reading and of investigation by each student. [Given in 1903-04.]

1 hr., 2d semester (Brown)

3. Social Ethics.—A study of moral values as expressed and developed in the various domestic, industrial, political, philan-

*Absent on leave.

thropic, and other social relations of common life. The general method is inductive and practical, addressing itself mainly to the study of conduct in its results. [Given in 1904-05.]
1 hr., 2d semester (Brown)

4. The Early Church.—A study of the thought and life of primitive Christianity as recorded in the Acts and Epistles of the New Testament. The aim will be to discriminate the local from the universal, the temporary from the permanent elements, and to show the bearing of these truths upon the moral and religious problems of modern times.
1 hr., 2d semester (Brown)

5. Framework of the Old Testament.—A course of lectures presenting the archæological facts regarding the peoples and languages mentioned in the Scriptures as well as the literary sources that have contributed to the Old Testament, including the literary and text-critical treatment of each book. [Given in 1904-05.] 2 hrs., both semesters (Voorsanger)

PHILOSOPHY

William James, Acting Professor.

1. A General Introduction to Philosophy.—Lectures, with constant reference to Paulsen's Introduction to Philosophy as a text-book. The examination will cover both lectures and text-book. 3 hrs., 2d semester (James)

PSYCHOLOGY

Frank Angell, Professor.
Lillien Jane Martin, Assistant Professor.

1. General Psychology.—Lectures and Exercises. Not open to first-year students. 3 hrs., both semesters (Angell)

2. Experimental Psychology.—Lectures, one hour; laboratory, two hours. Students are recommended to take this course in connection with course 1.
2 hrs., both semesters (Martin, Angell)

3. Psychology of Humor.—Open to those who have completed course 1, or its equivalent.
2 hrs., 2d semester (Angell)

4. Advanced Laboratory Work in Psychology.
3 hrs., both semesters (Angell, Martin)

5. Psychology of the Emotions, with special reference to the Fine Arts. Open by permission to first-year students.
2 hrs., 1st semester (Martin)

6. Psychology of the Social Relations.—Open by permission to first-year students. 2 hrs., 2d semester (Martin)

7. Current Psychological Literature.—In this connection a sub-section for the purpose of reading German Psychology will be formed, if so desired.
1 hr., both semesters (Angell, Martin)

8. Systematic Psychology.—Open to those who have completed one year's work in Psychology.
2 hrs., 1st semester (Martin)

9. Child Psychology.—Open to those who have completed course 1, or its equivalent.
2 hrs., 2d semester (Martin, Angell)

10. Research Work.—Hours and conditions to be arranged.
(Angell, Martin)

EDUCATION

*Ellwood P. Cubberley, Associate Professor.
David Samuel Snedden, Assistant Professor.
*Anthony Henry Suzzallo, Instructor.
William Webb Kemp, Edwin Reagan Snyder, Cecelia Freeman Atherton, Assistants.

Only graduates and teachers of experience who desire to prepare for administrative work or for work in Education in Normal Schools, and whose preparation and experience are satisfactory to the Department, will be accepted as major students in Education.

The courses in Education are open to all students as electives or as minor subjects, but except in the above special cases the major subject should be chosen elsewhere.

1. Public Education.—A study of the province and problems of public education in the United States. An introductory course. Open to second year students.
2 hrs., both semesters (Cubberley)

*Absent on leave, 1904-05.

2. History of Education in Europe.—Lectures following a syllabus, assigned readings, and reports. A study of the development of educational ideals and systems from early times to the present, with particular reference to the forces which have operated in the evolution of the various historic ideals and types of schools. 3 hrs., both semesters (KEMP, SUZZALO)

3. History of Education in America.—Lectures, assigned readings, and reports. A study of the development of educational ideals, systems, and methods from the earliest colonial period to the present, with particular reference to the growth and extension of public education in the United States.
2 hrs., both semesters (SUZZALLO)

4. Elementary Education.—Lectures, reports, and discussions. A study of some of the more fundamental aspects of American elementary education, including a discussion of its aims, organization, curricula, and methods.
3 hrs., 1st semester (SNEDDEN, SUZZALLO)

5. Secondary Education.—Lectures, reports, and discussions. A study of the scope, organization, and method of public and private secondary schools in America, including a treatment of its preparatory, cultural, commercial, manual training, and industrial aspects. There will be included a discussion of the purposes, value, and limitations of the various subjects of the curriculum.
3 hrs., 2d semester (SNEDDEN, SUZZALLO)

6. Education and Society.—A study of educational institutions in their relations to social development. Special attention will be given to the effects of recent social changes upon educational aims and practice. The various attempts to make education more effective for social purposes will be investigated, and also the special problems connected with the education of negroes, foreigners, and socially defective classes. Open to third-year students.
2 hrs., both semesters (SNEDDEN)

7. Courses of Study for Elementary Schools.—The more fundamental principles of education are studied with reference to their application to the formation and administration of courses of study for elementary schools. Each member of the class will carry on during the year a special study in

some one subject of the elementary curriculum. A Saturday morning class. [Alternates with course 9, and will not be given in 1905-06.] 2 hrs., both semesters (Snedden)

8. The Principles of General Method.—An examination of the principles of general method and their application to actual teaching. The work will involve a critical study of some of the recent contributions to educational literature, and the application of the principles of method to class-room work. A Saturday morning class, open only to teachers of experience. 2 hrs., both semesters (Snedden)

9. City School Administration.—A study of some of the problems involved in city school administration, as found in various typical city systems. Intended primarily for those preparing for administrative work.
2 hrs., both semesters (Snyder, Cubberley)

10. State School Administration.—A study of the educational principles underlying the administration of school systems in State and county, involving a comparative study of the best and the worst features of American State school systems. 3 hrs., both semesters (Cubberley)

11. Thesis Work.—In certain courses, students may be given an additional hour of credit on presentation of a satisfactory thesis on an assigned topic, and embodying the results of independent work. The consent of the instructor is necessary before registering. 1 hr., both semesters

12. Special Courses.—Special work in independent research will be provided for students prepared to do advanced work, the nature of the investigation being determined by the student's preparation and needs. Such work will include studies in administration, educational history, and the curriculum.
Hours to be arranged (Cubberley, Snedden, Suzzallo)

13. Journal Club.—Regular meetings of instructors and advanced students for the discussion of new books and current literature.
1 hr., both semesters (Cubberly, Snedden, Suzzallo)

Courses in Other Departments

The following courses in other departments will be accepted as part of the work of the Department of Education,

though not more than four hours of such courses will be accepted for the Teachers' Certificate, and then only when the student has made preparation to teach the subject either as a major or as a minor.

a. Nature Study.—A course of practical work in nature study for students who expect to teach the subject in the public schools. Students must receive the permission of the instructors to register for this course. Presupposes at least one year of laboratory science. One two-hour lecture and demonstration period weekly. [Given by Professor JENKINS, of the department of Physiology.] 1 hr., 2d semester

b. Teachers' Course in Greek.—[See course 17 in the Department of Greek.] 2 hrs., 2d semester (MURRAY)

c. Teachers' Course in Latin.—[See course 17 in the Department of Latin.] 2 hrs., 2d semester (ELMORE)

d. Teachers' Course in German.—[See course 10 in the Department of Germanic Languages.]
2 hrs., 1st semester (GOEBEL)

e. Teachers' Course in French.—[See courses 20 and 21 in the Department of Romanic Languages.]
2 hrs., both semesters (MATZKE)

f. Teachers' Course in English.—[See course 12 in the Department of English.] 2 hrs., 1st semester (SEWARD)

g. Teachers' Course in Drawing.—[See course 10 in the Department of Drawing.] 2 hrs., 2d semester (CLARK)

h. Teachers' Course in Elementary Physics.—[See course 13 in the Department of Physics.]
1 hr., both semesters (SANFORD)

i. Physical Education.—[See courses in the Department of Hygiene.] (STOREY)

THE TEACHERS' RECOMMENDATION

[For regulations governing recommendation for the High School Teachers' Certificate, see p. 70.]

HISTORY

MAX FARRAND, ARLEY BARTHLOW SHOW, Professors.
CLYDE AUGUSTUS DUNIWAY, EPHRAIM DOUGLASS ADAMS, Associate Professors.
HENRY LEWIN CANNON, Instructor.

1. Historical Training Course.—A practical course in the finding and handling of historical material. Required of first-year history majors. 2 hrs., both semesters (CANNON, with co-operation of other history instructors)

[History of Greece.—See Greek 10.]

[History of Rome.—See Latin 29.]

3a. The Early Middle Ages, 476-1095.—A general course, open to all students who have had one year in ancient history, or a satisfactory equivalent. 3 hrs., 1st semester (SHOW)

3b. The Later Middle Ages, 1095-1492.—A continuation of course 3*a*. Open to all students who have had course 3*a*, or a satisfactory equivalent. 3 hrs., 2d semester (SHOW)

4a. English History to 1485.—General outline course, open to first-year students. 3 hrs., 1st semester (CANNON)

4b. English History since 1485.—A continuation of course 4*a*. 3 hrs., 2d semester (CANNON)

With permission of their major departments, students may register for two hours' credit in courses 4*a* and 4*b* and be excused from supplementary reading.

5a. Modern European History, 1500-1715.—A general outline course, open to students who have had courses 3*a* and 3*b*, or a satisfactory equivalent.
2 hrs., 1st semester (ADAMS)

5b. Modern European History, 1715-1900.—A continuation of course 5*a*. 2 hrs., 2d semester (ADAMS)

With permission of their major departments, students may register for one hour credit in courses 5*a* and 5*b* and be excused from supplementary reading.

6. American Colonial and Revolutionary History to 1783.—Open to students who have taken courses 4*a* and 4*b*, or a satisfactory equivalent. [Not given in 1905-06.]
3 hrs., both semesters (DUNIWAY)

7. United States History, 1783-1844.—Open to students who have taken courses 4*a* and 4*b*, or a satisfactory equivalent.
3 hrs., 1st semester (FARRAND)

8. Constitutional and Political History of the United States since 1844.—A continuation of course 7.
3 hrs., 2d semester (DUNIWAY)

[Courses 7 and 8 will alternate with course 6. Together they will afford a survey of the field of American History.]

9. The Westward Movement in United States History.—The influence of the West upon the development of the United States. Not open to first-year students.
3 hrs., 2d semester (FARRAND)

With permission of their major departments, students may register in course 9 for two hours and be excused from supplementary reading.

10. Pacific Slope History.—Open to all but first-year students. [Not given in 1905-06.]
3 hrs., 1st semester (DUNIWAY)

11. English Constitutional History.—Open to students who have taken courses 4*a* and 4*b*.
2 hrs., both semesters (CANNON)

12. Empire and Papacy in Middle Ages. Open to third-year students, who have taken courses 3*a* and 3*b*. Subject in 1904-05, "The Age of the Hohenstaufen." [Not given in 1905-06.] 2 hrs., 1st semester (SHOW)

13. History of France in the Middle Ages. Open to students who have taken courses 3*a* and 3*b*.
2 hrs., 1st semester (SHOW)

14. Italian Renaissance.—Open to third-year students, who have taken courses 3*a* and 3*b*. Subject in 1905-06, "Italian Art and Humanism in the Fourteenth and Fifteenth Centuries." 1 hr., 2d semester (SHOW)

15. Europe since 1789.—A selected subject for some particular period is studied. The subject for 1905-06 will be "English Parliamentary Opinion on the American Civil War." Open to third-year students who have taken courses 5*a* and 5*b*.
2 hrs., both semesters (ADAMS)

18. Diplomatic History of the United States.—Primarily for third and fourth-year students, who must have had at least two courses in modern history.

3 hrs., 1st semester (Duniway)

19. International Law.—Primarily for third and fourth-year students, who must give evidence of a fair knowledge of modern history. It is mainly a study of the leading cases, with class discussion to develop (1) a statement of the general principles of international law, and (2) an outline of the history of the subject. 3 hrs., both semesters (Duniway)

20. Oral Debate.—Open to a limited number of advanced students, and should be preceded by English 10. The course is intended to give training in the preparation of oral arguments on public questions in the fields of history, politics, economics, and sociology, and to afford experience in public speaking, with the benefit of criticism by the instructors.

2 hrs., both semesters (Duniway, Alden, Bassett)

21. Historical Composition.—Every student taking history as a major subject, unless taking course 1, is required to register with some instructor in the department for regular training in the gathering, critical handling, and presentation of historical material. The exact method to be followed will be determined by the instructor according to the needs of the individual student. 1 hr., each semester

22. Historical Bibliography and Criticism.—Open to third and fourth-year students. [Not given in 1905-06.]

2 hrs., 1st semester (Farrand)

Advanced Courses

Intended primarily for graduate students, but open to advanced undergraduates, with permission of the instructors.

27. Painting of the Italian Renaissance.—A practical study of one or more great Renaissance artists. Subject for 1905-06, "Titian." Ability to read German and French is desirable.

1 hr., 1st semester (Show)

28. Mediaeval Institutions.—A practical study of select feudal documents. Ability to read Latin, German, and French is required. 1 hr., 2d semester (Show)

30. Eighteenth Century English History.—Subject in 1905-06, "The Internal Affairs of England under William Pitt."

2 hrs., 2d semester (Cannon)

31. English Diplomatic History.—Subject in 1905-06, "English Diplomatic Action during the French Revolution—First Period, 1788-1793." Reading ability in French required.
2 hrs., both semesters (ADAMS)

32. Constitutional History of the United States.—Subject for 1905-06, "Land System of the United States."
2 hrs., each semester (FARRAND)

33. The Westward Movement.—Subject for 1904-05, "The American Occupation of California." [Not given in 1905-06.]
2 hrs., each semester (FARRAND)

34. Later American History.—Critical Examination of selected topics. [Not given in 1905-06.]
2 hrs., 2d semester (DUNIWAY)

35. English Colonization in Australia.—The work in this course will take up some topic in connection with the early history of Australia, and will be conducted on lines of individual study. 3 hrs., both semesters (ADAMS)

37. Seminary in Later United States History. Subject for 1905-06, "Federal Relations of the Pacific States."
2 hrs., both semesters (DUNIWAY)

38. Seminary in Pacific Slope History. Co-operative study of some selected topic. [Not given in 1905-06.]
2 hrs., 2d semester (DUNIWAY)

ECONOMICS AND SOCIAL SCIENCE

SIMON JAMES MCLEAN, Associate Professor.
HENRY ALVIN MILLIS, Assistant Professor.
ALBERT CONSER WHITAKER, Instructor.

Economics 1 must precede all other courses. Economics majors are also required to take course 2; along with this they may take either course 4 or course 11, followed by course 10*a*.

1. Elements of Economics.—An introduction to the subject, designed for the general student as well as for those specializing in the department. Open to first-year students. For Economics majors this is a three-hour course, consisting of two lecture hours and one hour of quiz. For those taking the course as an elective there will be two lecture hours.
2 or 3 hrs., both semesters (MCLEAN)

2. Principles of Economics.—An intensive study of the principles of Economics as developed in course 1. Required of Economics majors. 2 hrs., both semesters (MILLIS)

3. Economic Theory.—The theory of value and distribution. Preferably taken in senior year. [Given in 1905-06 and alternate years.] 2 hrs., both semesters (WHITAKER)

4. Money and Banking.—Functions of money; token and paper money; money in international trade; bimetallism and the silver question. The mechanism of credit and theory of banking; American and foreign banking systems; the money market. 3 hrs., both semesters (WHITAKER)

5. The American Transportation System.—The evolution of the railway system; railway geography; railway consolidations; the economic effects of water transportation, etc. 3 hrs., 1st semester (MCLEAN)

5a. Railway Rates and Finance.—Theory of rate-making; classification; factors affecting rate-making; the decline in rates; railway capitalization; operating ratios; cheapening of methods of financial control, etc. 3 hrs., 2d semester (MCLEAN)

6. Corporations and Trusts.—Elementary survey of corporation law; history of corporations and corporate combinations, pools and trusts, in relation to public policy; present tendencies in legislative control. 2 hrs., both semesters (WHITAKER)

7. Commerce of the Pacific.—Studies in the trade, resources, and problems of commercial diplomacy in the Orient bordering the Pacific, including an examination of the Isthmian Canal project. [Given in 1906-07 and alternate years.] 2 hrs., 2d semester (WHITAKER)

8. Public Finance.—Public expenditures, revenues, debts, and financial administration. Special attention will be given to American practice in taxation. 3 hrs., both semesters (MILLIS)

9. Local Finance.—This is a continuation of course 8. The object will be to make a comparative study of local finance in America and in European countries, and to familiarize the student with American practice. [Not given in 1905-06.] 3 hrs., 2d semester (MILLIS)

10. Industrial History of England.—The several stages in the industrial evolution of England will be studied, particular attention being given to the Industrial Revolution, and to the modern capitalistic system. [Not given in 1905-06.]
3 hrs., 1st semester (MILLIS)

10a. Industrial History of the United States.—A review of the industrial evolution of the United States from colonial times. Special attention will be given to the developments of the last thirty years. 3 hrs., 2d semester (MILLIS)

11. The Labor Problem.—The course will cover the modern industrial system, wage system, collective bargaining, and other features of trade unionism, strikes, boycotts and lock-outs, arbitration and conciliation, factory legislation, workingmen's insurance, profit-sharing, co-operation, and socialism.
3 hrs., 1st semester (MILLIS)

12. Financial History of the United States.—The federal finances, the tariff policy, and the monetary and banking history of the United States. Those who have not had Public Finance and six hours' credit in American History will not be admitted without special consent. [Not given in 1905-06.] 3 hrs., 2d semester (MILLIS)

13. Selected Economic Problems. Speculation, panics, and crises. Tariff and reciprocity. Immigration. [Given in 1906-07 and alternate years.] 2 hrs., 1st semester (WHITAKER)

14. Communications.—A comparative study of the policy and experience of the more important countries in regard to transportation by common roads and by water; the postal system; the telegraph system; the telephone system.
2 hrs., 2d semester (MCLEAN)

15. Thesis.—In certain courses students are given an additional hour of credit on presentation of a satisfactory thesis embodying the results of independent work. Permission to register for thesis work must be obtained in each case from the major professor. 1 hr., either semester

16. Railway Regulation in the United States. The development of a regulative policy to protect the public interests.
2 hrs., 1st semester (MCLEAN)

17. Railway Regulation in England. The development of a regulative policy to protect the public interests. [Not given in 1905-06.] 2 hrs., 2d semester (MCLEAN)

LAW

NATHAN ABBOTT, Professor.

CHARLES ROSS LEWERS, WILLIAM CULLEN DENNIS, Assistant Professors.

ARTHUR MARTIN CATHCART, *HENRY WINTHROP BALLANTINE, Instructors.

The Department of Law† offers a three years' course of professional study leading to the degree of Bachelor of Laws and constituting a thorough preparation for the practice of law. The degree of Bachelor of Arts, or its equivalent, from this or from some other institution of recognized collegiate rank, is ordinarily a prerequisite to obtaining the degree of Bachelor of Laws. The first year of the law course, however, may be taken by undergraduates in the University and counted toward the degree of Bachelor of Arts. An exception also is made in the case of students over twenty-one years of age, as stated below.

Admission to Courses in Law

There is no admission to the Department of Law independent of admission to the University. The student whose major subject is Law must enter the University either as an undergraduate, graduate, or special, according to the requirements stated on pp. 35-57. He is advised to enter in August, as the law courses begin then and continue throughout the year.

Undergraduates who intend to offer one year of law work toward the degree of Bachelor of Arts pursue, under the advice of the Faculty of Law, a general course of study preparatory to law, the study of which they begin after having received credit for work in the preliminary general course. English Composition (English 8) is required, and should be taken as early as possible. To such undergraduates work in law is open only as follows: In their first year in the University, none; second year,‡ Elementary Law; third year,

*Beginning August, 1905.

† The Law Department of the Leland Stanford Junior University is a member of the Association of American Law Schools.

‡ In this connection a student who has full entrance credit has second year standing when he has 20 hours of university credit; third year standing when he has 50 hours; and fourth year when he has 80 hours.

Contracts and Criminal Law; fourth year, Property I, Torts, and Equity I; comprising altogether the first year of the law course. After receiving the degree of Bachelor of Arts, the student completes the second and third years of the law course, and becomes entitled to the degree of Bachelor of Laws.

Students entering with advanced standing from other institutions may take such law work as would be open to students with an equal standing obtained in this University, excepting that credit for work in law given elsewhere is not accepted by the Department until after examination as provided below, under the topic "Work in law done elsewhere."

Only the law courses enumerated above may ordinarily be counted toward the degree of Bachelor of Arts, but, by special permission of the Faculty of Law, students not intending to practice law may substitute such courses as will aid them in other pursuits.

Students admitted to graduate standing† in the University may complete the law course in three years, receiving the degree of Bachelor of Laws.

Regular students over twenty-one years of age and special students may, by special permission, complete the law course in three years, without doing other University work; but degrees will be conferred upon such students only as stated below under "Degrees."

In general the second-year courses are open only to students who have completed all the first-year courses, and the third-year courses are open only to students who have completed at least five second-year courses. Such students may also take other second-year courses.

[For the present, some of the second and third-year courses are given only in alternate years, so it may be necessary for students admitted to the second-year courses to take some third-year courses, and *vice versa*.]

Work in Law Done Elsewhere

Work in law done elsewhere will not be accepted by the Department, except upon satisfactory examination in all the subjects offered; but students who have done law work elsewhere may be admitted provisionally to such courses here as

† In this connection a student has graduate standing when he has 120 hours of University credit.

their previous work justifies, taking examinations later. Examinations may be taken as follows: (*a*) in *all* subjects at the end of the spring semester, in May; (*b*) in *first year* subjects at the opening of the fall semester, in August; (*c*) on request, entering students will be given examinations in second and third-year subjects at the opening of the fall semester. By special permission, any of these examinations may be taken elsewhere, but application for such permission must be made not later than April 1st for the spring examinations, and August 1st for the fall examinations. For these examinations the applicant should prepare himself by a study of the books used in the several courses.

Moot Courts

Voluntary moot courts are held under the advice of the Law Faculty, and it assists in the selection of cases for argument, but no credit is given for work done in moot court.

Library

The Law Library contains complete sets of all English and Irish reports, and those of the leading American jurisdictions, most of the Canadian reports, all the recent American reports, and a large number of text-books and works of reference on legal topics.

Degrees

Students of the University whose major subject is Law, on completing the first-year law courses, English 8, and satisfying all other University requirements, will receive the degree of Bachelor of Arts.

Students who have received the degree of Bachelor of Arts, or its equivalent, from this or from some other institution of recognized collegiate rank, and who have completed fifteen courses in law, exclusive of Elementary Law and the Special Courses in Law, will be given the professional degree of Bachelor of Laws.

Regular students over twenty-one years of age and special students who have completed fifteen courses in law including the first year's courses, with distinguished excellence, in residence at the University, will also be given the degree of Bachelor of Laws.

Courses of Instruction

Preliminary Course

1. Elementary Law.—Lectures. No text-books. [Open to students of all departments who have twenty hours of University credit. Not to be given in 1905-06.]
2 hrs., both semesters

First-Year Courses

2. Contracts.—Text-book; Williston's Cases on Contracts.
3 hrs., both semesters (Cathcart)

3. Criminal Law and Procedure.—Text-book: Beale's Cases on Criminal Law. 3 hrs., both semesters (Lewers)

4. Torts.—Text-book: Ames and Smith's Cases on Torts.
2 hrs., both semesters (Cathcart)

5. Property I.—Text-book: Gray's Cases on Property, Vols. I and II. 3 hrs., both semesters (Abbott)

6. Equity I.—Text-book: Ames's Cases on Equity Jurisdiction. [Omitted in 1904-05.]
3 hrs., both semesters (Ballantine)

Second-Year Courses

7. Agency.—Text-book: Wambaugh's Cases on Agency. [Not to be given in 1905-06.]
2 hrs., both semesters (Lewers)

8. Bills and Notes.—Text-book: Ames's Cases on Bills and Notes. [Omitted in 1904-05.]
3 hrs., both semesters (Abbott)

9a. Damages.—Text-book: Beale's Cases on Damages.

b. Public Service Companies.—Text book: Beale and Wyman's Cases. These two subjects taken together comprise one course and cannot be taken separately. [Not to be given in 1905-06.] 2 hrs., both semesters (Lewers)

10. Equity II: Trusts.—Text Book: Ames's Cases on Trusts. [Omitted in 1904-05.]
2 hrs., both semesters (Lewers)

11. Evidence.—Text-book: Thayer's Cases on Evidence (2d ed.). This course, when possible, should be preceded by Pleading. 3 hrs., both semesters (Dennis)

12. Persons.—Text-book: Smith's Cases. [Omitted in 1904-05.] 2 hrs., 1st semester (Dennis)

13. Pleading.—Text-book: Ames's Cases on Common Law Pleading. [Omitted in 1904-05.]
2 hrs., both semesters (CATHCART)

14. Property II.—Text-book: Gray's Cases on Property, Vols. III and IV. 3 hrs., both semesters (ABBOTT)

15. Sales.—Text-book: Williston's Cases on Sales. [Omitted in 1904-05.] 2 hrs., 2d semester (DENNIS)

16. Suretyship and Mortgages.—Text-book: Ames's Cases on Suretyship and Wyman's Cases on Mortgages.
3 hrs., both semesters (LEWERS)

THIRD-YEAR COURSES

17. Conflict of Laws.—Text-book: Beale's Cases on Conflict of Laws. [Omitted in 1904-05.]
3 hrs., both semesters (BALLANTINE)

18. Constitutional Law.—Text-book: Thayer's Cases on Constitutional Law. [Open also to well-prepared fourth-year students in History and Economics.]
3 hrs., both semesters (DENNIS)

19. Corporations.—Text-book: Smith's Cases on Corporations. [Not to be given in 1905-06.]
3 hrs., both semesters (DENNIS)

21. Partnership.—Text-book: Ames's Cases on Partnership. [Omitted in 1904-05.]
2 hrs., both semesters (————)

22. Property III.—Text-book: Gray's Cases on Property, Vols. V and VI. 2 hrs., both semesters (ABBOTT)

SPECIAL COURSES

23. California Practice.—Text-book: California Code of Civil Procedure. 1 hr., both semesters (————)

24. International Law.—Text-book: Snow's Cases on International Law. [See course 19 in History.]
2 hrs., both semesters (DUNIWAY)

DRAWING

Arthur Bridgman Clark, Associate Professor.
George Loftus Noyes, Assistant Professor.
Chloe Lesley Starks, Instructor.

The Department aims to meet the needs of three classes of students: Students who wish training in artistic perception and graphic expression, for its general culture value; students who wish to begin their professional art study while still receiving other University training; and technical students, to whom some drawing is essential.

The minimum requirement for the high school teachers' recommendation in Drawing is courses 1, 2, 3 and 5 (at least five hours), 6, and 10.

1. Elementary Drawing.—Introductory course. The habits of visual observation and graphic expression which underlie all representative art are given such exercise as is possible in the time. To this end, boxes, vases, and other simple forms are used as models. The emphasis is placed equally on accuracy of proportion, ensemble of light and shade, and a free, natural, direct technical method. While registration for two hours is permitted, at least three hours (nine actual working hours per week) is needed as preparation for other courses in the Department. Open to all students.
2 to 5 hrs., 1st semester (Starks)

2. Elementary Drawing of the Head.—Drawing the head from the cast. Open to students with a satisfactory record in course 1. 3 to 5 hrs., either semester (Noyes)

3. Advanced Drawing of the Head.—A continuation of course 2 from life. Students will use pencil, charcoal, or oil paint as the instructor may advise. Open to second-year students. 3 to 5 hrs., either semester (Noyes)

4. Color.—Still-life painting in oil paints as an introduction to the subject. Students with sufficient skill in the use of oil may use water colors as a medium. Open to second-year students. 2 to 5 hrs., either semester (Noyes)

5. Landscape.—Chiefly outdoor work; but supplemented during the colder weather of each semester by study from drawings and photographs, with special attention to decorative composition. The pen, water color, pencil, and charcoal

are used according to the needs of each individual. Open to students who have made a satisfactory showing in course 1.

3 to 5 hrs., either semester (Clark)

6. Lectures.—Ideals and processes in pictorial and applied art. Open to all but first-year students.

2 hrs., 1st semester (Clark)

7. Journal Club.—Discussion of modern and current art. Open to advanced students of the Department.

1 hr., 2d semester (Clark)

8. Scientific Perspective.—This course deals with the mathematical principles of perspective in solving problems on the drafting-board, and with the application of the principles in drawings of actual buildings, landscape, and figures from nature. [Course 8 is given in alternate years; will not be given in 1905-06.] 2 hrs., 2d semester (Clark)

9. Scientific Drawing.—A course designed to assist students in natural history laboratories. It will include the drawing of simple scientific subjects in pen outline, line and stipple shading, wash, and line and wash. Especial attention will be paid to needs of individual students. Open to students completing course 1.

2 hrs., both semesters (Starks)

10. Teachers' Course.—For intending teachers of drawing. Open to advanced students only.

2 hrs., 2d semester (Clark)

MATHEMATICS

Robert Edgar Allardice, Rufus Lot Green, Professors.
George Abram Miller, Associate Professor.
Hans Frederick Blichfeldt, Assistant Professor.

The courses in this Department have been arranged to meet the wants of two classes of students: students whose major subject is Mathematics, and students who, while taking their major in some other department, desire to include some mathematics in their course. Students in engineering are provided for in the Department of Applied Mathematics.

For students whose major subject is Mathematics the following programme of work is recommended: in the first year, courses 2, 3, and 4; in the second year, courses 9 and 10; in the third year,

courses 11 and 12; while the work during the fourth year and for graduate students may be selected from the remaining courses, and from the Department of Applied Mathematics. The advanced courses will, for the most part, be given once in two or once in three years, and it is hoped that the advanced students will thus have the opportunity of studying the more important branches of modern mathematics.

Students whose major subject is Mathematics are recommended to begin the study of either French or of German in their freshman year.

Students who desire to take one or more years of mathematics as a part of a liberal training are recommended to begin their work in this department with one or more of the courses 1, 2, 3, 4.

1. Trigonometry.—Elementary course, with applications involving logarithmic calculation.
2 hrs., 1st semester (Miller)

2. Solid Geometry.—Elementary course.
2 hrs., 2d semester (Miller)

3. Geometry.—This course includes a discussion of some of the more modern developments of Synthetic Geometry. Open to students who have credit for Plane Geometry as an entrance subject. 2 hrs., both semesters (Blichfeldt)

4. Algebra.—Fundamental laws, degree, symmetry, indeterminate coefficients, remainder theorem, factors, complex numbers, introduction to theory of equations, progressions, permutations, and combinations. Presupposes entrance credit in Elementary Algebra. 3 hrs., both semesters (Green)

Students making Mathematics their major subject should take courses 3 and 4 as the first year's work, and those who have not had trigonometry should also take course 1.

5. Determinants.—Elementary course. Presupposes course 4. [Not given in 1904-05.]
2 hrs., 1st semester (Blichfeldt)

6. Non-Euclidean Geometry.—Presupposes a course in Calculus. [Not given in 1904-05.]
2 hrs., 2d semester (Blichfeldt)

9. Introduction to the Calculus.—Limits, indeterminate forms, series, partial fractions, differentiation, simpler methods of integration, with applications. Presupposes course 4.
2 hrs., both semesters (Green)

10. Co-ordinate Geometry.—An elementary course in the analytic geometry of the conic sections, including the discussion of the general equation of the second degree. Presupposes course 4. 3 hrs., both semesters (BLICHFELDT)

Courses 9 and 10 form the regular work, during the second year, for students whose major subject is Mathematics.

11. Modern Analytic Geometry.—Homogeneous co-ordinates, including line co-ordinates, projective properties of conics, systems of conics. Introduction to general theory of curves. Presupposes course 10. 2 hrs., both semesters (GREEN)

12. Differential and Integral Calculus.—Lectures on the Differential and Integral Calculus, with applications to the theory of plane curves, on the lines of Williamson's treatises. 3 hrs., both semesters (BLICHFELDT)

13. Advanced Calculus.—A continuation of course 12. [Not given in 1904-05.] 2 hrs., 1st semester (ALLARDICE)

14. Theory of Functions.—Elementary course. [Not given in 1904-05.] 2 hrs., 2d semester (ALLARDICE)

15. Differential Equations. 3 hrs., both semesters (BLICHFELDT)

16. Definite Integrals.—[Not given in 1904-05.] 2 hrs., 2d semester (ALLARDICE)

17. Theory of Functions.—Extended course. [Not given in 1904-05.] 3 hrs., both semesters (ALLARDICE)

18. Theory of Equations.—Including an introduction to the theory of binary algebraic forms. 3 hrs., both semesters (GREEN)

19. History of Elementary Mathematics.—[Not given in 1904-05.] 2 hrs., 1st semester (MILLER)

20. General Astronomy. 2 hrs., both semesters (MILLER)

21. Projective Geometry. 2 hrs., 1st semester (MILLER)

22. Elementary Theory of Groups. 3 hrs., both semesters (MILLER)

23. Theory of Numbers. 2 hrs., 2d semester (MILLER)

24. Seminary: Theory of Groups.—[Not given in 1904-05.] 2 hrs., both semesters (MILLER)

APPLIED MATHEMATICS

Leander Miller Hoskins, Professor.
Halcott Cadwalader Moreno, Assistant Professor.
*William Albert Manning, George Irving Gavett, Instructors.
George De Forest Barnett, Lawrence Edminster Cutter, Ray Alexander Gulick, Assistants.

Under Applied Mathematics are included the courses in mathematics which are required of students in Engineering. The aim is to make these courses practical in the sense of furnishing thorough drill on fundamental principles and much practice in their application. Emphasis is laid upon accuracy and system in the solution of numerical problems.

Entrance credit in Elementary Algebra (subject 2) and Plane Geometry (subject 3) is a prerequisite to all the following courses. Students who are not thoroughly trained in the preparatory work, or who lack aptitude for mathematical study, cannot pursue these courses successfully.

Courses 1, 2, 3, and 4 should be taken during the first year, and courses 5 and 6 during the second year. Students deficient in any of the first-year work cannot be admitted to second-year courses.

1. Algebra.—The course begins with a rapid review of elementary algebra, students showing deficient preparation not being permitted to continue. Entrance credit in Advanced Algebra (subject 6) is not accepted as equivalent to this course, which is required of all who intend to take any following course in Applied Mathematics, except such as pass a special examination.† 5 hrs., 1st semester (Moreno, Gavett)

2. Solid Geometry.—This presupposes Plane Geometry, and is not required of those having entrance credit in Solid Geometry. 2 hrs., 1st semester (Moreno, Gavett)

3. Trigonometry.—Plane and Solid Geometry are prerequisites. Entrance credit in Trigonometry (subject 5) is not accepted as equivalent to this course, which is required of all intending to take any following work in Applied Mathematics, except those who pass a special examination.‡

3 hrs., either semester (Moreno, Barnett, Cutter)

* Absent on leave, 1904–05.

† This examination will be held at 9 a. m., August 30, 1905.

‡ This examination will be held at 2 p. m., August 30, 1905 and January 9, 1906.

4. Co-ordinate Geometry.—This must be preceded by courses 1, 2, and 3 (or may be taken concurrently with 3).
5 hrs., 2d semester (Moreno, Gavett)

5. Calculus. 3 hrs., both semesters (Moreno, Gavett)

6. Theoretical Mechanics.—An elementary course, covering the fundamental principles of Statics, Kinematics, and Kinetics, restricted mainly to coplanar forces and to plane motion of particles and of rigid bodies. An elementary treatment of Graphic Statics is included. The course is designed as a preparation for the courses in Applied Mechanics taken by students of Engineering, but is open to all whose preparation includes the equivalent of courses 1, 2, 3, and 4. Calculus must either precede this course or be taken at the same time. 5 hrs., both semesters (Hoskins, Gulick)

PHYSICS

Fernando Sanford, Professor.
*Herman De Clercq Stearns, Associate Professor.
Samuel Jackson Barnett, Frederick John Rogers, Assistant Professors.
Joseph Grant Brown, Instructor.
Grace Nims Brown, Clarence Knight Studley, Assistants.

1. Dynamics.—Including hydrostatics and pneumatics. Open only to students who have had algebra and plane geometry. This course or its equivalent is required as a preparation for each of the courses following (except 6 and 7). One lecture and two or three laboratory periods per week. All students are urged to register for four hours if they can spare the time. Students who have not taken a preparatory course in Physics are expected to register for four hours.
3 or 4 hrs., either semester (Rogers, Brown)

2. Electricity and Magnetism.—One lecture and two or three laboratory periods per week. Open only to students who have had course 1, or its equivalent.
3 or 4 hrs., either semester (Barnett, Rogers)

3. Heat.—One lecture and two laboratory periods per week. Open to students who have had course 1.
3 hrs., either semester (Stearns)

* Absent on leave, 1904-05.

4. Sound.—Including wave-motion. Open to students who have had course 1. 2 hrs., 1st semester (STEARNS)

5. Elementary Optics.—Open only to students who have had trigonometry. Two laboratory periods per week.
2 hrs., either semester (SANFORD)

Courses 1, 2, 3, 4, and 5 constitute a course in general Physics, and are intended to precede the advanced courses.

6. Heat and Light.—Two lectures and two laboratory periods per week. This is a special course designed for first-year engineers. Open to engineering students who have entrance credit in Physics. 4 hrs., 1st semester (SANFORD, STEARNS)

7. Electricity and Magnetism.—An introductory course, open only to students of engineering who have received entrance credit in Physics. Two lectures and two laboratory periods per week.
4 hrs., either semester (BARNETT, ROGERS)

8. Experimental Optics.—Two laboratory periods per week. Course 8 is required of Physics majors.
2 hrs., both semesters (SANFORD)

9. Electrical Theory and Measurements. Open to students who have taken course 2 or course 7 and who have taken or are taking calculus. 3 hrs., both semesters (BARNETT)

10. Investigation of Original Problems in the Laboratory.
Hours to be determined in each case (SANFORD)

11. General Physics.—Lectures. Open to students who have had courses 1, 2, 3, 4, and 5, or their equivalent.
4 hrs., both semesters (SANFORD)

12. Electrical Theory.—Based largely upon the instructor's *Elements of Electromagnetic Theory.* Open to students who have taken course 2 or course 7, and calculus.
3 hrs., both semesters (BARNETT)

13. Teachers' Course in Elementary Physics. Open to students who have had courses 1, 2, 3, 4, and 5, or their equivalent. 1 hr., both semesters (SANFORD)

14. General Thermodynamics.—Open to students who have had calculus and course 3, or its equivalent.
3 hrs., 1st semester (STEARNS)

15. Vibratory Motion.—A theoretical course, consisting of recitations and lectures illustrated by occasional lecture experi-

ments and a few carefully executed laboratory experiments. A knowledge of differential and integral calculus is required.

3 hrs., 1st semester (Rogers)

16. The Kinetic Theory of Gases.—Open to students who have had calculus and course 3, or its equivalent.

2 hrs., 2d semester (Stearns)

17. History of Physics.—Lectures and readings on the history of physical science with special reference to the development of theories. The first five courses in physics are required before entering this course.

2 hrs., 2d semester (Rogers)

18. Electrical Theory, Advanced Course.—Selected parts of the subject. Open to students who have taken course 12.

2 or 3 hrs., both semesters (Barnett)

Course 6 in Applied Mathematics is also recommended for major students in Physics.

Teachers' Recommendation

The minimum requirement for the high school teachers' recommendation in Physics is courses 1, 2, 3, 4, 5, or an equivalent.

Laboratory Fees

Courses 1 and 2, three or four dollars (four dollars for four hours); courses 3, 6, and 7, three dollars per semester; courses 4, 5, and 8, two dollars per semester. In courses 9 and 10, the fee will depend upon the number of hours credit and the apparatus used, but will not exceed five dollers per semester.

CHEMISTRY

John Maxson Stillman, Lionel Remond Lenox, Professors.

Stewart Woodford Young, Edward Curtis Franklin, Associate Professors.

Robert Eckels Swain, Assistant Professor.

Alvin Joseph Cox, Instructor.

William Elmer Crawford, Carlton Cheney James, Norman Eliot Dole, Ralph Harrison Sherry, William Edmund Burke, Harry Drake Gibbs, Jennie Alice Comings, Fred Finley Fitzgerald, Assistants.

I. Lecture Courses

1. General Inorganic Chemistry.—Comprising a systematic treatment of elementary principles and the properties of the more

important elements and their compounds. In connection with laboratory course *a*, and open in connection with that course, to all students in the University.

2 hrs., both semesters (SWAIN)

2. Principles of General and Inorganic Chemistry.—Discussion of the elements of chemical theories and of important generalizations in the field of inorganic chemistry. Open to all students who have completed courses 1 and *a*.

3 hrs., both semesters (STILLMAN)

3. Organic Chemistry.—Lectures and reviews on the Chemistry of Carbon Compounds. Open to students who have completed courses 1 and *a*.

2 hrs., both semesters (FRANKLIN)

4. Industrial Chemistry.—Lectures on the processes of chemical arts and industries—fuels, acid and alkali manufacturing, explosives, sugar-making and refining, petroleum, etc. Lectures in this course are also given by Professor LENOX (Iron and Steel) and by Professor FRANKLIN (Dyes). Open to students who have completed courses 2 and 3; or may be taken concurrently with course 3.

2 hrs., both semesters (STILLMAN)

5. History of Chemistry.—Open to students who have completed courses 2 and 3. [To be given in 1905-06.]

2 hrs., 1st semester, in alternate years (STILLMAN)

6. Qualitative Analysis.—In connection with laboratory course *b*. 1 hr., either semester (LENOX)

7. Advanced Organic Chemistry.—Advanced topics in Organic Chemistry, including Stereo-Chemistry. Open to students who have completed course 3. [Will not be given in 1905-06.]

2 hrs., 1st semester, in alternate years (FRANKLIN)

8. General Physical Chemistry.—Lectures covering as far as possible the whole field of physical chemistry. Open to students who have completed courses 2 and *d* in Chemistry, courses 4 and 9 in Mathematics, and course 1 in Physics (course 2 being also recommended). 3 hrs., both semesters (YOUNG)

9. Physical-Chemical Measurements.—An informal course of lectures given as needed in connection with course *f*.

(No credit) (YOUNG)

10. Theories of Analytical Chemistry.

1 hr., 2d semester (YOUNG)

11. Physiological Chemistry.—A brief survey of the field of Physiological Chemistry. Open to students who have completed courses 3 and *d*, and Physiology 1.

2 hrs., both semesters (SWAIN)

12. Seminary in Chemistry.—Discussion of assigned topics in theoretical and general chemistry. Open to graduate students, and to advanced undergraduates in Chemistry, with the approval of the Faculty in Chemistry.

1 hr., both semesters

II. LABORATORY COURSES

a. General Inorganic Chemistry.—First semester: Illustrating fundamental laws and principles of elementary chemistry. Second semester: Inorganic preparations and general chemistry. Students with entrance credit in chemistry may be excused from the first semester's laboratory work. In connection with course 1. 2 afternoons, both semesters

(SWAIN, CRAWFORD, FITZGERALD, COMINGS)

b. Qualitative Analysis.—Open to students who have completed courses 1 and *a*.

3 afternoons, either semester (LENOX, SHERRY)

c. Preparation of Typical Carbon Compounds.—Open in connection with course 3 to students who have completed course *b*. Either one or two semesters, one semester required for graduation of Chemistry majors.

3 afternoons, either or both semesters (FRANKLIN)

d. Quantitative Analysis.—Training in manipulation in gravimetric and volumetric methods. Work begins either semester. Students in other departments than Chemistry may register for three afternoons if they cannot arrange for four, as is recommended. Open to students who have completed courses 6 and *b*.

4 afternoons, either semester (STILLMAN, COX)

e. Mineral Analysis.—Systematic analysis of representative minerals. Open to students who have completed course *d*, and required of students whose major subject is Chemistry, unless *f* or *h* be elected instead.

4 afternoons, either semester (STILLMAN, LENOX, COX)

f. Physical-Chemical Measurements.—Exercises in the practice of physical-chemical laboratory methods. Open to students who have completed or are taking course 8, and who have completed course *d*. 3 or 5 hrs., either semester (YOUNG)

g. Physical-Chemical Research.—Special problems for original investigations in the field of Physical Chemistry. Open to students who have completed course *f*.

Hours to be arranged (Young)

h. Physiological Chemistry.—A laboratory course embracing a study of the various tissues and fluids of the body and of the chemistry of digestion and excretion. Requirements as under lecture course 11. 3 hrs., both semesters (Swain)

i. Urine Analysis.—Open to students who have completed course *d*. 3 afternoons, 2d semester (Swain)

j. Special Methods in Mineral Analysis.—Chiefly volumetric, including iron and steel analysis. Open to students who have completed course *d*. 4 afternoons, 2d semester (Lenox)

k. Organic Chemistry Research.

Hours to be arranged (Franklin)

l. Sugar Analysis.—Methods of analysis used in sugar manufacture and refining. Open to students who have completed course *e*. 3 or 4 afternoons, 1st semester (Stillman)

m. Organic Analysis.—Open to students who have completed courses *d* and *e*. 2 afternoons, either semester (Franklin)

n. Assaying.—Open to students who have completed course *d*. 3 afternoons, either semester (Lenox, Dole)

o. Sanitary Water Analysis.—Open to students who have completed course *d*. 3 afternoons, 2d semester (Stillman)

Candidates for the degree of Bachelor of Arts in Chemistry may select any one of the four following courses (A, B, C, D), the requirements of the Department being as follows:

A. General Chemistry

First Year:—Chemistry 1, *a*; Physics 1; Mathematics 4; German 1.

Second Year:—Chemistry 2, 6, *b*; Mathematics 9; German 2*a*.

Third and Fourth Years:—Chemistry *d*, 3, *c*, 8, *f*.

Course A is recommended for all who are studying the Science of Chemistry for its own sake or for the profession of teaching.

B. Analytical Chemistry

First Year:—Chemistry 1, *a*; Physics 1; German 1.

Second Year:—Chemistry 2, 6, *b*; Geology 1, 2; German 2*a*.

Third and Fourth Years:—Chemistry *d*, *e*, *c*, *n*, 3, 10; Geology 5.

Course B is particularly adapted to students who are looking forward to the career of analytical chemist and assayer.

C. Medical or Sanitary Chemistry

First Year:—Chemistry 1, *a;* Physiology 1; German 1.

Second Year:—Chemistry 2, 6, *b;* Physics 1; German 2*a*.

Third and Fourth Years:—Chemistry 3, *c, d,* 11, *h.*

Course C is especially designed for students looking forward to medical education.

D. Chemical Engineering

This course comprises four years of the necessary five years' work leading to the advanced degree of Engineer in Chemical Engineering. Candidates in this course receive the degree of A. B. in Chemistry upon completion of the following requirements:

First Year:—Chemistry 1, *a;* Applied Mathematics 1, 2, 3, 4; German 1.

Second Year:—Chemistry 2, 6, *b, d;* Applied Mathematics 5, 6.

Third Year:— Chemistry 3, *c;* Engineering 1*a*, 1*b*, 2; Physics 1, 2 (or 6, 7); German 2*a*.

Fourth Year:—Chemistry 4, *e* (or *n*); Mechanical Engineering 2, 3*a*, 3*c;* Geology 11*c;* Engineering 3*a*.

Course D is intended particularly for students who are working toward the degree of Chemical Engineer and who desire to fit themselves for positions of responsibility in connection with the administration of industries involving chemical knowledge and skill.

Advanced Degrees

Applicants for the degree of *Master of Arts* in Chemistry will be expected to complete, in addition to the requirements for the bachelor's degree, the equivalent of thirty hours' work in the University—of which approximately two-thirds must be in the department. This work will include a thesis based on laboratory work, and chemistry 8 and *f,* if not included in the undergraduate work.

Candidates for the advanced degree of *Engineer* in Chemical Engineering will be required to complete, in addition to the requirements for the A. B. degree specified under course D: Mechanical Engineering 4, 6 (first semester of the course), 9, 8 (2 afternoons per week for one semester), Chemistry 8, and a thesis based on laboratory work. Electrical Engineering is advised if possible, though not required. It is estimated that these requirements may be completed in one year after the completion of the requirements under Course D.

Candidates for the degree of *Doctor of Philosophy* in Chemistry, after the completion of the equivalent of the requirements for Master of Arts or Engineer, will follow such courses as are approved by the department faculty, subject to general University regulations.

Teachers' Recommendation

The minimum requirement for the high school teachers' recommendation in Chemistry is courses 1 and *a* (Elementary and General Inorganic, lectures and laboratory), the first half of course 2 (Principles of Chemistry), and either the second half of course 2, or courses 6 and *b* (Qualitative Analysis and laboratory).

Laboratory Fees

A charge of twenty-five dollars per semester will be made to students in each laboratory course of not more than four hours' registration. Of this charge five dollars per semester in assaying, and ten dollars per semester in the other courses, is returnable, less bills for breakage and loss of apparatus.

BOTANY

Douglas Houghton Campbell, Professor.
*George James Peirce, Associate Professor.
Anstruther Abercrombie Lawson, Instructor.

1. Elementary Botany.—Study of representatives of the principal groups of plants with lectures upon special morphology and classification. (Campbell's University Text-book of Botany.) The aim of this course is to give the student a grounding in the principles of plant structure and classification, derived from a careful study in the laboratory of selected types, supplemented by such explanatory lectures as may be deemed necessary.
3 hrs., both semesters (Campbell, Peirce, Lawson)

2. Algæ.—Lectures, reading, and laboratory work upon the special morphology and classification of the Algæ. [To be omitted in 1905-06.] 5 hrs., 1st semester (Campbell)

3. Archegoniatæ.—Special morphology and classification of the Archegoniatæ. Continuation of course 2. [To be omitted in 1905-06.] 5 hrs., 2d semester (Campbell)

*Absent on leave, first semester, 1904-05

4. Physiology.—Laboratory work, lectures, and reading on Respiration and Nutrition. [At least an elementary knowledge of Physics and Chemistry is a desirable preliminary to this course.] [Omitted in 1904-05.] 3 hrs., 1st semester (PEIRCE)

5. Elementary Bacteriology.—Laboratory work, lectures, and reading. [To be omitted in 1905-06.]
3 hrs., 1st semester (PEIRCE)

6. The General Physiology of Plants.—Lectures. Open to all except first-year students. [Omitted in 1904-05.]
1 hr., 1st semester (PEIRCE)

7. The Evolution of Plant Forms.—Lectures. Open to all except first-year students. [To be omitted in 1905-06.]
1 hr., 2d semester (CAMPBELL)

8. Physiology.—Laboratory work, lectures, and reading on Growth, Irritability, and Reproduction. [At least an elementary knowledge of Physics and Chemistry is a desirable preliminary to this course.] 3 hrs., 2d semester (PEIRCE)

9. Histology.—Lectures and laboratory work on the structure and development of the sporophyte tissues. Microtechnique.
3 hrs., 1st semester (LAWSON)

10. Cytology.—Lectures and laboratory work on the cell and cell organs. 3 hrs., 2d semester (LAWSON)

11. Advanced Work in Morphology and Physiology.—Intended specially for graduate students. (CAMPBELL, PEIRCE)

Course 1 must precede all other courses, except courses 6 and 7. Students making the subject a major must complete thirty-five hours, including courses 1 to 4, course 2 or course 3 in Systematic Botany, and also course 1 in Zoology, before graduation. Course 11 is intended especially for graduate students, and opportunities will be given such students for carrying on special lines of work upon original problems.

Teachers' Recommendation

The minimum requirement for the high school teachers' recommendation, with Botany as a minor subject, is course 1 and two additional courses.

Laboratory Fees

Ten dollars for course 5; five dollars for courses 4 and 8; three dollars per semester for each of the other laboratory courses.

SYSTEMATIC BOTANY

WILLIAM RUSSELL DUDLEY, Professor
PEHR HJALMAR OLSSON-SEFFER, Instructor

Instruction in this Department chiefly relates to the Spermaphytes, their structure, affinities, and geographic distribution. The advanced work on the Fungi will also be given under its direction. Course 1, or its equivalent, and the Algæ and Archegoniatæ in General Botany, course 1 in Zoology, and course 1 in Entomology are required of students intending to graduate with Systematic Botany as a major study. Course 1 is also required as a basis for courses 2, 4, and 6. An elementary knowledge of the structure of the flowering plants only is required to enter courses 3 and 5. Students are strongly advised to take Physiological Anatomy and one course in Physiology by Professor PEIRCE.

[**1. Elementary Botany.**—A study of plant types, etc. This is course 1 under General Botany.]

2. Fungi.—The laboratory work (three hours) will be devoted to morphology, development, and culture methods; the lectures to systematic relationships, with an account of economically important forms. 5 hrs., 1st semester (DUDLEY, OLSSON-SEFFER)

3. Spermaphyta.—The morphology, histology, and affinities of the principal orders of flowering plants represented on the Pacific Slope will be studied, and an acquaintance made with typical forms through dissection and drawing.
4 hrs., 2d semester (DUDLEY, OLSSON-SEFFER)

[**4. The Algæ and Archegoniatæ.**—Courses 2 and 3 under General Botany.]

5. Geographical Distribution and Forest Botany.—Lectures on the orders containing trees and shrubs and on the general principles of geographical distribution which they illustrate. Laboratory work, also preparation of herbarium specimens of woody plants, native and exotic.
3 hrs., 2d semester (DUDLEY, OLSSON-SEFFER)

6. The Compositæ.—A study of representatives of the tribes of Compositæ, with reference to the general principles of classification. 2 or more hrs., 1st semester (DUDLEY, OLSSON-SEFFER)

7. Advanced Work.—Advanced or special study, chiefly for seniors in the Department. It is planned to meet the needs of each individual, and to promote habits of independent work.
3 or more hrs., each semester (DUDLEY)

8. Graduate Work.—This includes investigation on a special subject in the Spermaphyta or Fungi, which may be either a systematic or a biological study. It is supplemented by reading, and a study of methods in bibliography. (Dudley)

Several carefully planned excursions in the second semester, through the zones of trees and chaparral in the adjacent mountains, are made the subjects of written reports by the students.

The Herbarium consists largely of plants collected in Western America, and includes, besides purchases, considerable donations from the National Herbarium, the California Academy of Sciences, J. W. Congdon of Mariposa, and others. Gifts of herbarium specimens of trees and shrubs are especially desired, and will be named for collectors. The considerable private collections of flowering plants and fungi belonging to the head of the Department are in constant use.

Laboratory Fees

Laboratory fees for courses 5 and 6, two dollars; for the other courses, three dollars.

PHYSIOLOGY AND HISTOLOGY

Oliver Peebles Jenkins, Professor.
Frank Mace McFarland, Associate Professor.
James Rollin Slonaker, Clara S. Stoltenberg, Assistant Professors.
John Francis Cowan, Michitaro Sindo, Assistants.

Undergraduate Courses

1. General Anatomy and Physiology.—This course is designed to give a general view of the laws of the structure and the activity of organisms. The work will give occasion to discuss many questions of General Biology. It consists of: first, the study of the cell and its activities as shown in the unicellular organisms, in reproductive cells, and in individual cells of many tissues; second, the study of the laws and course of development resulting in higher differentiations in structure, and specializations in function, exhibited in a selected series of organisms, both animals and plants, of increasing complexity; third, the comparative study of the physiological processes of forms placed under widely different conditions. The latter part of the course is occupied with

an introduction to the embryology, anatomy, and physiology of vertebrates. (One lecture and five laboratory hours a week.)

3 hrs., both semesters

(Jenkins, Slonaker, Stoltenberg, Cowan)

2. Physiology of Muscle, Blood, and Circulation.—To be preceded by course 1. An experimental course covering the ground represented in Foster's Physiology, Part I, or the American Text-book on the same subjects. (One lecture and five laboratory hours per week.)

3 hrs., 1st semester (Slonaker, Cowan)

3. Physiology of Digestion, Respiration, Elimination of Wastes, Metabolism, and Nutrition.—Planned to follow course 2. An experimental course, with Foster's Physiology, Part II, and the American Text-book, as texts. (One lecture and five laboratory hours per week.)

3 hrs., 2d semester (Slonaker, Cowan)

4. Structure of the Nervous System.—The course consists of the dissection and comparative study of a series of vertebrate brains, including the human brain and cord, also the peripheral nervous system; abundant material is provided, also such necessary helps as the latest models and charts. For texts the student will use Quain, Edinger, and Barker. (One lecture and five laboratory hours per week.) 3 hrs., 1st semester (Stoltenberg)

4b. Structure of the Nervous System.—Advanced course. Open to those who have taken courses 4 and 5

2 hrs., 2d semester (Stoltenberg)

5. Histology of the Nervous System and Sense Organs.—The course includes also the anatomy of the sense organs. It is planned to accompany course 4, the two being designed to give the gross and minute anatomy of the central and peripheral nervous systems and sense organs. The texts necessary for the student's use are Quain and Barker. (One lecture and five laboratory hours per week.)

3 hrs., 1st semester (Stoltenberg)

6. Physiology of the Nervous System and Sense Organs.—An experimental course in these subjects, designed to follow courses 4 and 5. Texts: Foster, American Text-book. (One lecture and five laboratory hours per week.)

3 hrs., 2d semester (Jenkins)

7. The Vertebrate Eye.—A comparative study of the structure and physiology of the eyes of vertebrates, giving special attention to the retina. Open to advanced students. (Lecture and laboratory work, six hours per week.)

2 hrs., 2d semester (Slonaker)

8. Special Courses in Physiology.—Advanced courses open only to those who have had courses 1, 2, 3, 4, 5, and 6. They are arranged for the advanced study of selected subjects in physiology, or as a drill in the methods of research. The work will be planned for the individual student, the time varying with the exigencies of the case.

2 to 5 hrs., both semesters (Jenkins)

9. Histology.—This course includes both the study of the tissues in a comparative way, and the history of their development; also the minute anatomy of organs, except those of the nervous system and senses. [See courses 4 and 5.] It also gives a drill in histological technique. Open to those who have taken course 1, or its equivalent. Students with physiology as their major are advised to take courses 2, 3, and 9 together. (One lecture and six laboratory hours a week.)

3 hrs., both semesters (McFarland)

10. Histogenesis.—A course in advanced Histology for students who have completed courses 1 and 9, and in addition the first semester of Vertebrate Embryology (Zoology 7). It comprises the comparative study of the histogenesis of the fundamental vertebrate tissues and organs. (One lecture per week, minimum laboratory work six hours per week.)

3 hrs., 1st semester (McFarland)

11. Neurocytology.—A comparative study of the minute structure of the nerve cell and nerve fibre, the neurone theory, and the question of functional alterations of structure during normal activity and artificial stimulation. (One lecture and at least six laboratory hours per week.) Open to advanced students.

3 to 5 hrs., 2d semester (McFarland)

12. Cellular Biology.—A course in Cytology dealing with the structure and functions of the cell, with special reference to the reproductive processes in unicellular and multicellular organisms, and the theories connected therewith. Open to advanced students. (Two lectures per week, with demonstrations and laboratory work.) 3 to 5 hrs., 2d semester (McFarland)

13. Anatomy.—This course consists of twelve weeks' study of human osteology, with a brief comparative study of skeletons of vertebrates. The remaining six weeks is given to mammalian myology, angeology, and splanchnology (dog, cat, rabbit). [For anatomy of nervous system and sense organs, see courses 4 and 5.]

3 to 5 hrs., 2d semester (Cowan)

14. Special Courses in Histology.—Advanced courses in Histology will be arranged for individual students, with a view to giving drill in methods of research. Open only to those who have had courses 1, 5, and 9.

2 to 5 hrs., both semesters (McFarland)

15. Journal Club.—Students in the advanced classes will be expected to meet once a week to discuss current literature in Physiology and Histology. 1 hr., both semesters

16. Seminary in Physiology and Histology.—Open to graduate students. 2 hrs., both semesters

17. Research in Physiology or Histology.

Hours to be determined, both semesters

(Jenkins, McFarland, Slonaker, Stoltenberg)

Candidates for the Bachelor's degree who select Physiology and Histology as a major will be expected to take courses 1, 2, 3, 4, 5, 6, 9, and 15, and at least five hours to be made up from the other courses offered; and in addition courses 1 and *a* in Chemistry, 1 and 2 in Physics, and the first semester in Embryology (course 7 in Zoology).

Laboratory unit of credit.—In those courses in which definite laboratory time is not fixed, three hours of laboratory work are taken as the equivalent of one hour's credit.

Laboratory Fees

Seven dollars per semester, except for course 1, in which the fee is five dollars per semester.

Graduate Courses

The graduate work of the Department is included in the courses numbered 4*b*, 7, 8, 10, 11, 12, 14, 15, 16, and 17. Undergraduate students may elect such of these courses as they are prepared to take, but credit recorded in undergraduate standing will not count toward a higher degree. The details of the work of a graduate student will be planned for each individual, and will naturally depend on the aim sought by him and upon his

previous training. Candidates for the higher degrees will be expected to include in their work attendance on the Journal Club and Seminary, the selection of certain of the courses given above, and the accomplishment of some research. When it is desired to select a minor subject, the choice of such minor will be guided by the needs of the candidate. The work leading to these degrees is of such a nature as to require a reading knowledge of German and French for its accomplishment.

Preparation for the Study of Medicine

Students intending to enter on the study of medicine are advised to take Physiology and Histology as a major subject, with Chemistry, Physics, Comparative Anatomy of the Vertebrates, and Hygiene among the collateral subjects. Such a course gives that foundation both in scientific knowledge and in skill in experimental Physiology, and in Histological and Anatomical technique, which will make it possible to accomplish the medical course of the best medical schools in a shorter time and with greater advantage.

HYGIENE

William Freeman Snow, Associate Professor.
Thomas Andrew Storey, Assistant Professor.
Halbert William Chappel, Instructor.
Florence Bolton, Vera Townsend, Assistants.
Oswald Swinney Lousley, Charles L. Duncan, Gymnasium Assistants.

Lectures

1. Elementary Hygiene.—Lectures upon the care of the body and conditions conducive to student health. One lecture each week through the year in connection with Gymnasium course *a* and course *e*. 1 hr., both semesters (Storey)

2. General Hygiene.—Lectures on sanitary science and public health. Open to all students who have had course 1 in Physiology or its equivalent. 2 hrs., 1st semester (Snow)

3. History of Medicine.—Lectures on the more important men and events influencing the development of preventive medicine and sanitary science. Not open to first-year students. [Course 3 will be given in 1905-06.]
2 hrs., 1st semester, in alternate years (Snow)

4. Sanitary Legislation.—Lectures on special legislation in the United States on subjects of Public and Industrial Hygiene and Quarantine law. Not open to first-year students. [Course 4 will be given in 1905-06.]

2 hrs., 2d semester, in alternate years (Snow)

Laboratory Courses

5a. Topographical Anatomy.—Open by special arrangement to students who have completed courses 1, 2, 3, 4, 9, and 13 in Physiology. 1 to 3 hrs., either semester (Storey)

5b. Physical Examination.—Open by special arrangement to students who have completed course 5*a* in Hygiene and courses 5 and 6 in Physiology. 1 to 3 hrs., either semester (Storey)

6a. Public Health.—Methods of inspection and examination employed by Officers of the Public Health Service. Assigned field work will require trips to the Government and Municipal Health Departments in San Francisco, and to the Federal Quarantine Station on Angel Island. Open to students who have completed courses 2, 3, 4, 9, and 13 in Physiology, and course 2 in Hygiene. (Course 6*a* was given in 1904-05.)

2 to 5 hrs., 2d semester, in alternate years (Snow)

6b. Prophylactic Measures.—Discussions and experimental work on immunity and on the efficiency of certain chemical and physical methods of control of the transmissible diseases. [Course 6*b* will be given in 1905-06.]

2 to 5 hrs., 2d semester, in alternate years (Snow)

7. Research in Hygiene and Physical Education.—Open to students who have had sufficient preliminary training to enable them to do independent work.

Hours to be arranged (Snow, Storey)

Encina Gymnasium

a. Elementary Physical Education.—Two exercise hours a week in the Gymnasium and its open-air divisions. This work is planned for the development of strength and endurance, and is largely individual, being adapted to the requirements indicated upon physical examination. [This work is part of the requirement for course 1.] (Storey, Chappel)

b. Advanced Physical Education.—A continuation of course *a*, with the introduction of exercises in muscular co-ordination and control. Three hours a week. Open to students completing course *a* or its equivalent.

1 hr., both semesters (Storey, Chappel)

c. Special Gymnastic Training.—Special work planned for the development of co-ordination and skill on the heavy gymnastic apparatus. Three hours a week. Open to students completing two semesters of course *b* or its equivalent.

1 hr., both semesters (STOREY, CHAPPEL)

d. Special Gymnastic Training.—Advanced work with opportunites for training in Gymnasium methods. Three hours a week. Open only to specially qualified students who have completed two semesters of course *c* or its equivalent.

1 hr., both semesters (CHAPPEL)

ROBLE GYMNASIUM

e. Elementary Physical Education.—Given as a part of the required work for course 1. (BOLTON, TOWNSEND)

f.—Open to students who have completed course *e* or its equivalent. ½ hr., both semesters (TOWNSEND, ———)

g.—Open to students who have completed course *f*. Various sections will be arranged.

½ hr., both semesters (TOWNSEND, ———)

h.—Open to students who have completed two semesters of course *g*. ½ hr., both semesters (BOLTON, ———)

It is advisable for all students to consult the instructors before registering in these courses. New students intending to register for Gymnasium work should present themselves for the required physical examination as early as possible after arriving at the University.

No students are accepted in the department as candidates for a degree, but the increasing demand for University-trained instructors in Physical Education makes it desirable that some recognition be given those students who are competent to direct physical education work. A departmental recommendation will be given to students of exceptional ability who have completed courses 1, 2, 5*a*, 5*b*, the gymnasium courses in Hygiene, and courses 1 to 9 inclusive in Physiology. The Physical Training courses are carried on in Encina Gymnasium for men, and in Roble Gymnasium for women. Athletic facilities are offered in connection with each gymnasium.

Laboratory Fees

Roble Gymnasium, one dollar per semester; Encina Gymnasium and courses 5 to 7, two dollars each per semester.

ZOOLOGY

Charles Henry Gilbert, Professor.
George Clinton Price, Harold Heath, Associate Professors.
John Otterbein Snyder, Assistant Professor.
Edwin Chapin Starks, Curator.
Walter Kenrick Fisher, Milo Herrick Spaulding, Mary Ruhuma Cravens, Assistants.

1. Elementary Zoology.—A laboratory course involving the study of representatives of the principal groups of animals, together with lectures on their structure and classification, and on the general laws of biology which they illustrate.
3 hrs., both semesters (Price)

2. The Invertebrates.—This course, following the first year's work, is designed to give the student a broader knowledge of the morphology and relationships of the more important invertebrate groups. 3 hrs., both semesters (Heath)

3. Invertebrate Embryology.—A study of segmentation, the formation of the germ layers, and certain phases of the later development, including the significance of larval forms and the relationships of the principal phyla. Must be preceded by course 2. 2 hrs., both semesters (Heath)

4. Advanced Work on Invertebrates.—The original investigation of problems connected with the anatomy, embryology, or classification of invertebrates.
2 to 5 hrs., both semesters (Heath)

5. The Vertebrates.—A general course in the classification of vertebrate animals, with studies in the habits and the geographical distribution of species. The course will include field excursions and a study of the methods of collecting and preserving specimens. 2 hrs., both semesters (Snyder)

6. Comparative Anatomy of the Vertebrates.—A more detailed examination of vertebrate morphology, including dissection of representatives of the several classes of vertebrates, with comparative studies in vertebrate osteology, the nervous and circulatory systems, etc. 3 hrs., both semesters (Gilbert, Snyder)

7. Vertebrate Embryology.—Development of the chick through the first three days of incubation.
2 hrs., 1st semester (Price)

8. Vertebrate Embryology.—A study of the early stages of the development of various classes of vertebrates, special stress being laid upon the formation of the germ-layers.

2 hrs., 2d semester (PRIÇE)

9. Foetal Anatomy.—Later development of vertebrates, including such subjects as the metamorphosis of the circulatory and urogenital systems. The work will be devoted largely to the mammals. 2 hrs., 2d semester (PRICE)

10. Ichthyology.—A course of lectures and laboratory work, including an examination of the larger groups of fishes with special reference to the characters on which they are based, and including practical work in the discrimination of species.

2 hrs., both semesters (GILBERT, STARKS)

11. Advanced Ichthyology.—Special problems in the morphology and classification of fishes will be set for advanced students prepared for such work.

2 to 5 hrs., both semesters (GILBERT)

12. Journal Club.—Open to seniors and graduate students.

2 hrs., both semesters (GILBERT)

Major students must before graduation complete courses 1, 2, 6, 10, 12, the first semester of courses 3 and 7, one advanced course in Zoology, and course 1 in Botany.

Work for graduate and special students will be laid out in accordance with their individual needs and preferences.

THE ZOOLOGICAL COLLECTIONS

The ZOOLOGICAL MUSEUM contains a very full representation of the fishes of North America, and includes among others a valuable series of the deep-water fishes of the Pacific, and large collections from the West Indies, the Hawaiian Islands, Bering Sea, Japan, the coasts of Mexico and Central America, and the Galapagos Islands. The museum contains also a large representation of the reptiles, batrachians, birds, and mammals of California and adjoining States. The development of the museum has been due very largely to the co-operation of Mr. TIMOTHY HOPKINS.

Material illustrating the principal groups of invertebrates is ample for class instruction.

Laboratory Fees

All laboratory courses, three dollars each per semester.

ENTOMOLOGY AND BIONOMICS

*Vernon Lyman Kellogg, Professor.
Robert Evans Snodgrass, Ruby Green Bell, Instructors.
Mary Isabel McCracken, Assistant.
David Starr Jordan, Lecturer.

ENTOMOLOGY

1. Elementary Entomology.—The elementary study of insect structure, metamorphosis, habits and classification, including practice in collecting and preserving specimens.
3 hrs., either semester (Snodgrass, Bell)

2. Morphology and Development of Insects.—Continuation of the preceding course, including the study of the comparative morphology of adult and larval forms, and of insect life-history.
3 hrs., either semester (Kellogg, Snodgrass, Bell)

3. Insect Ecology and Economic Entomology.—The ecologic relations of insects, with special attention to the scale insects (Coccidæ) and others of economic importance in California. Must be preceded by courses 1 and 2.
2 or 3 hrs., both semesters (Kellogg, Snodgrass)

4. General Entomology.—A course of lectures and demonstrations. Open to students who have had a laboratory course in Biology (Zoology, Botany, or Physiology). [Not given in 1904-05.] 2 hrs., 2d semester (Kellogg)

5. Advanced Work.—Advanced study and investigation of the biology of insects. Laboratory and field work
2 to 5 hrs., both semesters (Kellogg, Snodgrass)

Work for graduate and special students will be specially arranged.

Major students in Entomology must obtain before graduation twenty-four hours' credit in Entomology, and credit for course 1 in Zoology, course 1 in General Botany, and course 3 in Systematic Botany, making forty hours in biological subjects. Course 1 in Zoology, or its equivalent, should precede any course in Entomology.

The *Entomological Collections* contain authoritatively determined specimens, accessible for comparison, in all of the insect orders, and include many sets of specimens illustrating the

* Absent on leave, 1904-05.

development and habits of insects. There is included, also, the most important existing collection of North American Mallophaga, comprising the types of four-fifths of all the species so far described from North America and the Pacific Islands, an unusually large collection of Coccidæ (scale insects), and a valuable series of specimens from the Galapagos Islands.

BIONOMICS

6. Organic Evolution.—Lectures on the laws or principles of biology and the factors in organic evolution. Not open to first-year students.

2 hrs., both semesters (Jordan, Kellogg, Bell)

7. Variation and Heredity.—Statistical and experimental work in the laboratory and vivarium. Open only to prepared students. 3 to 5 hrs., both semesters (Kellogg, Bell)

Laboratory Fees

Three dollars per semester for each laboratory course.

GEOLOGY AND MINING

John Casper Branner, James Perrin Smith, Professors.
John Flesher Newsom, Associate Professor.
Dorsey Alfred Lyon, Galen Howard Clevenger, Instructors.
David Morrill Folsom, William Alfred Williams, Henry Roland Johnson, Harold Sinclair Gay, Frederick William Nobs, Assistants.

Students intending to make Geology and Mining their major subject should offer, as a part of their entrance preparation, solid geometry, trigonometry, advanced algebra,* physics, chemistry, zoology, and French or German, or both; otherwise the mathematics, physics, and chemistry must be taken in the University.

The following is a summary of the courses that lead to the degree of Bachelor of Arts in Geology and Mining:

First Year.—Applied Mathematics 4 (5 hrs.); Chemistry 1, *a*, 6, *b* (10 hrs.); Engineering 1*a*, 1*b* (6 hrs.); Physics 7 (4 hrs.). Total 25 hrs.

* Students presenting trigonometry and advanced algebra as entrance subjects are required to pass a satisfactory special examination in those subjects, otherwise courses 1 and 3 in Applied Mathematics must be taken during the first year in the University.

Second Year.—Applied Mathematics 5, 6 (16 hrs.); Chemistry *d*, *e* (7 hrs.); Civil Engineering 4*a* (5 hrs.); Electrical Engineering 1 (4 hrs.); Geology and Mining 5*a*, *b* (4 hrs.). Total 36 hrs.

Third Year.—Engineering 2, 3*a* (8 hrs.); Mechanical Engineering 2, 3*c*, 6 (9 hrs.); Geology and Mining 1, 2, 3†, 4†, 9, 11*a*, 11*b* (14 hrs.). Total 34 hrs.

Fourth Year.—Geology and Mining 6, 7*a* or 7*b*, 10*a*, 10*b* (18 hrs.); Civil Engineering 8*c* (3 hrs.); Mechanical Engineering 8, 9 (4 hrs.); Engineering 3*b* (3 hrs). Total 28 hrs.

1. Dynamic and Structural Geology.—Lectures, with syllabus. 3 hrs., 1st semester (Branner)

1a. Physiography.—Lectures, with syllabus.
1 hr., 2d semester (Branner)

2. Economic Geology.—Lectures, with syllabus. Open to students who have completed course 1.
2 hrs., 2d semester (Branner, Newsom)

3. Topographic Geology.—Field and laboratory work, with the construction of geologic maps, models, and sections. Open to students who have completed course 1 in Geology, and course 4*b* in Civil Engineering.
4 hrs., summer vacation (Branner, Newsom, Williams)

4. Field Geology.—Field practice in working out geology in the field and its representation upon topographic maps and sections. Prerequisites: Geology 1 and Civil Engineering 4*b*.
1 to 5 hrs., summer vacation
(Branner, Newsom, Williams, Johnson, Folsom, Gay)

5. Mineralogy.—*a*. Elementary Crystallography, Mineralogy, and Petrography (first semester). *b*. Blowpipe Analysis (second semester). Open to students who have had elementary chemistry. 2 hrs., both semesters (———, Nobs)

6. Advanced Mineralogy and Petrography.—*a*. Mathematical, Physical, and Chemical Crystallography (first semester). *b*. Descriptive Mineralogy and Petrography, with special studies of the rock-forming minerals (second semester). Open to advanced students and graduates.
3 to 4 hrs., 1st semester; 4 hrs., 2d semester (———)

† Geology and Mining 3 and 4 (Topographic and Field Geology) must be taken during the summer vacation.

7. Paleontology.—*a.* Systematic Paleontology, or the history and character of organisms (first semester). *b.* Historical Geology, or the history and character of geologic formations (second semester). Open to students who have completed course 1.

2 to 4 hrs., 1st semester; 4 hrs., 2d semester (J. P. Smith)

8. Paleontology.—Original investigation of various problems in paleontology, especially of invertebrate morphology, and of the distribution of faunas. This course will consist entirely of private work, in field and laboratory. Open to advanced students and graduates.

2 to 5 hrs., both semesters (J. P. Smith)

[**9. Assaying.**—Open to students who have completed course *d* in Chemistry and courses 1 and 2 in Geology. This course is the same as course *n* in the Department of Chemistry.]

3 afternoons, either semester (Lenox, Dole)

10. Mining.—*a.* Lectures on mining operations and methods, including prospecting, development, methods of working, timbering, shaft sinking, and hoisting.

4 hrs., 1st semester (Newsom)

b. Continuation of *a*, including drainage, ventilation, and ore-dressing. 3 hrs., 2d semester (Newsom)

11a. General Metallurgy.—A study of the chemical and physical principles upon which the art of metallurgy is based, and of the materials used in metallurgical operations, such as fuels, refractory materials, etc.; and of the products resulting from these operations. An introduction to course 11*b*. Two lectures a week, and one afternoon of laboratory work throughout the semester. The chlorination and cyanide processes for treating gold ores will be taken up in the lectures during November and December. Open to students who have completed Chemistry 1 and *a*. 3 hrs., 1st semester (Lyon)

11b. Metallurgy of Silver, and of the Principal Base Metals, exclusive of Iron.—Two lectures a week and one afternoon of laboratory work. Open to students who have completed course 11*a*. 3 hrs., 2d semester (Lyon, Clevenger)

11c. Metallurgy of Iron, Steel, and the Alloys.—A study of their manufacture and physical properties with reference to their selection as constructive materials. Two lectures a week, and

one afternoon of laboratory work. Students taking this course are expected to have a knowledge of Elementary Chemistry.

3 hrs., either semester (Lyon, Clevenger)

11d. Metallography and Physics of the Metals.—Recitations, reading, and laboratory work. Howe's "Iron, Steel, and Other Alloys" will be used as a text. The laboratory work will include a study of the microstructure of the industrial metals and alloys, and of the influence of chemical composition, thermal and mechanical treatment, upon their structure. Also the relation of the structure of metals and alloys to their physical properties. Open only to students who have completed Chemistry 2, *d*, and *j*.

3 to 5 hrs., either semester (Lyon, Clevenger)

11e. Metallurgical Laboratory.—Considerable option will be allowed in the work of this course. A student may either take up some problem or problems in connection with the extraction of metals from their ores, such as the facilities of the laboratory will permit, or he may take up advanced work in the physics of metals, metallography, etc. Students wishing to take up work in connection with the extraction of metals from their ores must have completed Chemistry *d* and *e*, or their equivalent. Those wishing to take up advanced work in the physics of the metals, metallography, etc., must have completed Chemistry *d* and *j*, or their equivalent.

3 to 5 hrs. either semester (Lyon, Clevenger)

12. Mineralogy.—Original Investigations in Mineralogy and Petrography. This course consists entirely of private work in field and laboratory. Open only to advanced students and graduates. 2 to 5 hrs., both semesters (— —)

13. Paleontology.—Lectures on special topics. Open to advanced students and graduates.

1 hr., 1st semester (J. P. Smith)

14. Special Courses.—Special courses of instruction and training are laid out for advanced and special students according to the needs and qualifications of each individual. Special investigations are taken up by advanced students as rapidly as it is possible for them to undertake such work advantageously.

1 to 5 hrs., both semesters (Branner, Newsom)

[Courses in mine surveying, the designing of mining machinery and mine structures, and in mineral analysis are also given:

see Departments of Civil Engineering, Mechanical Engineering, and Chemistry.]

Laboratory Fees

Five dollars for the second semester in courses 5 and 11*c*; ten dollars each in courses 11*a*, 11*b*; ten to twenty-five dollars each in courses 11*d* and 11*e*, according to the number of hours taken.

ENGINEERING

A. Entrance Subjects

Students intending to take their major in one of the Engineering Departments are advised, though not required, to present, among their entrance subjects, advanced algebra,* solid geometry, trigonometry,* physics, drawing, and German or French. Special students should have completed entrance English, elementary algebra, and plane geometry. (See pp. 35-56.)

B. General Courses

I. Applied Mathematics

First-Year Courses:

Algebra; Solid Geometry; Trigonometry; Co-ordinate Geometry.

Second-Year Courses:

Calculus; Theoretical Mechanics.

[See announcement of Department of Applied Mathematics, p. 112.]

II. General Technical Courses

1a. Linear Drawing and Lettering.—(Drafting two afternoons a week, September and October.) Open to all students, and required of students in Engineering. The instruments and materials for this course cost from twenty to thirty dollars.

1 hr., either semester (Fish, Hodge, Mayreis)

1b. Descriptive Geometry.—Including applications to shades, shadows, and perspective. (Two afternoons of drafting each week, November and December. Two lectures and two after-

* Courses 1 and 3 in Applied Mathematics are required of all first-year students in Engineering, except such as have credit in the corresponding entrance subjects and also pass special examinations (see announcement of the Department of Applied Mathematics, p 112).

noons of drafting each week, January to May.) This course is open to students who have completed or are taking solid geometry and Engineering 1*a*, and is required of students in Engineering.

1 hr., 1st semester; 4 hrs., 2d semester (Fish, Hodge, Mayreis)

2. Applied Mechanics:

a. Mechanics of Materials.—Under this head are treated the theory of the strength and elastic properties of the ordinary materials of engineering construction. The main subjects covered are simple tension, compression, and shear; theory of flexure, with applications to simple and continuous beams; theory of long columns; torsion; repeated stress; sudden stress and resilience. (Lectures and recitations three hours a week.)

b. Testing of Materials.—Each student is required to make a series of experiments, testing the strength and elastic properties of wrought iron, cast iron, steel, and wood. A careful record of all experiments is required of every student. (Laboratory work, six hours a week.)

Open to students who have completed the first and second-year courses for Engineering students in Applied Mathematics; required of all students having Engineering as a major subject.

5 hrs., 1st semester (Wing, Brua, Hunter)

3. Hydraulics.

a. Hydrostatics and Hydraulics.—This course treats of fluid pressure, the principles of fluid equilibrium, and the laws governing the flow of water through orifices, over weirs, in closed conduits, and in open channels. Open to students who have completed courses 5 and 6 in Applied Mathematics.

3 hrs., 2d semester (Hoskins)

b. Hydraulic Motors.—A discussion of the theory of the main types of turbines, including centrifugal pumps. A few lectures on the general theory of energy and on relative motion are given as an introduction to the course. Open to students who have completed course 3*a*. 3 hrs., 1st semester (Hoskins)

I. CIVIL ENGINEERING

Charles David Marx, Charles Benjamin Wing, Leander Miller Hoskins, Professors.

John Charles Lounsbury Fish, Associate Professor.

Elmer George Brua, John Fletcher Byxbee, Jr., Frederick Hall Fowler, George Ashmun Hodge, Thomas Benton Hunter, Jr., Louis John Mayreis, Robert Breck Moran, Assistants.

A. Topographic Engineering

4a. Elementary Surveying.—Instruments; systems of co-ordinates; methods of surveying; latitude and azimuth; errors of observation; surveys; computing and mapping. (Lectures two hours, drafting and field work nine hours, each week.) Open to students who have completed Engineering 1*a* and Applied Mathematics, 1, 2, 3, and 4. Required of students in Civil and Mining Engineering.

5 hrs., either semester (Byxbee, Fish, Hunter)

4b. Elementary Surveying.—Course 4*a* abridged for students in Mechanical and Electrical Engineering. (Field work, reading, and drafting, six hours each week.)

2 hrs., 1st semester (Brua, Byxbee)

B. Railroad Engineering

6a. Railroad Surveying.—Including the transition curve and earthwork. (Recitations two hours, drafting and field work nine hours each week.) Open to students who have completed 4*a*. Required of students in Civil Engineering.

5 hrs., 2d semester (Fish, Fowler, Moran)

6b. Railroad Location.—Economics of location. Open to students who have completed 6*a*.

2 hrs., 1st semester (Fish)

6c. Railroad Construction.—(Drafting-room, two afternoons a week.) Open to students who have completed 6*a*, and have taken or are taking 8*b*. 2 hrs., 2d semester (Fish)

C. Structural Engineering

8a. Elements of Design.

1. *Materials.*—[See course 11*c*, Geology and Mining.]

2. *Mechanics of Structures.*—Course 6 in Applied Mathematics is extended to the analytical and graphical determination of

stresses in simple trusses. (Drafting-room, nine hours a week first half of semester.)

3. *Theory of Structural Details.*—Course 2 is extended to an investigation of the distribution of stresses in structural details. (Drafting nine hours a week last half of semester.)

Open to students who have completed course 1 in Engineering, and who have taken or are taking course 2 in Engineering, and also course 11*c* in Geology and Mining. Required of all students having Civil Engineering as a major subject.

3 hrs., 1st semester (WING)

8b. Elements of Design

1. *Materials.*—Structural materials, other than metals, are studied from an engineering standpoint. Wood, stone, brick, limes, cement, etc., are considered in order. (Lectures two hours a week first half of semester.)

2. *Foundations.*—Under this head are considered the bearing power of soils, strength of piles, distribution of pressures, and similar details connected with the design of simple foundations. (Lectures two hours a week last half of semester.)

3. *Design.*—Complete designs are made, including working drawings, bill of materials, and estimate of cost, of some simple structure, such as a mill building or highway structure. (Drafting-room, nine hours a week first half of semester; six hours a week last half of semester.)

4. *Testing.*—Extending the work of course 2*b*. Each student is required to make a series of experiments, testing the physical properties of brick, stone, and cement. (Laboratory, three hours a week last half of semester.)

Open to students who have completed course 8*a* in Civil Engineering; required of all students having Civil Engineering as a major subject. 5 hrs., 2d semester (WING)

8c. Elements of Design.—Courses 8*a* and 8*b* abridged to meet the requirements of students having Mining, Mechanical, or Electrical Engineering as a major subject. Special applications are made to hoisting and conveying structures, mill buildings, and central station buildings. (Hours to be arranged by consultation.)

Open to students who have completed courses 1 and 2 in Engineering, and course 11*c* in Geology and Mining.

3 hrs., either or both semesters (WING)

9. Railway Bridges.—This course comprises the determination of the stresses in modern types of railroad bridges, including cantilever and swing spans, masonry arches, and arch ribs; the discussion of the most economical types, spans, and dimensions of bridges and bridge members; the study of the methods of constructing sub-aqueous foundations, shop methods, erection, inspection of material, specifications, and other factors influencing the design of bridges. Designs of sub- and super-structure are made by each student to fulfill actual conditions, the parts proportioned, and bills of material prepared. Open to students who have completed course 8. (Lectures two hours per week, drafting nine hours.) 5 hrs., both semesters (WING)

D. Hydraulic Engineering

12. Water-Supply Engineering for Towns and Districts.—Sources of supply. Collecting and storing of water, either for water supply of towns or for irrigation purposes. Settling, filtering, conducting, and delivering of water, including the study and design of all accessory works. (Three hours lectures and recitations, six hours drafting.) Open to students who have completed courses 2 and 3 in Engineering and 4*a* and 8*a* in Civil Engineering; required of all students who take their major in Hydraulic Engineering. 5 hrs., 1st semester (MARX)

13. Sanitary Engineering.—Including sewerage of towns and drainage of lands. Special attention will be given to the study of all municipal sanitary problems, such as removal of sewage, destruction of garbage, construction, maintenance, sweeping, and repairs of streets and pavements. (Three hours lectures and recitations, six hours drafting.) Open to students who have completed courses 2 and 3 in Engineering and 4*a*, 8*a*, and 12 in Civil Engineering; required of all students who take their major in Hydraulic Engineering. 5 hrs., 2d semester (MARX)

15. Construction of Canals, River and Harbor Improvements.—Lectures and designing as per arrangement. Open to students who have completed courses 2*a*, 2*b*, and 3 in Engineering, and 4*a* and 8*a* in Civil Engineering.

2 hrs., both semesters (MARX)

16. Technical Seminary.—Study of German and French technical journals. Open only to fourth-year students in Civil Engineering. 2 hrs., both semesters (MARX)

II. MECHANICAL ENGINEERING

William Frederick Durand, Professor.
Guido Hugo Marx, Associate Professor.
Andrew Allen Browne, William Rankine Eckart, Assistant Professors.
Juluis Embret Peterson, Edward John Stanley, James Bennett Liggett, Theodore Palmateer, Instructors.
Robert Hughes Gaither, Assistant.

The courses specified below represent the major work for the undergraduate degree with Mechanical Engineering as a major subject. In addition, the typical work for this major includes the following courses in other departments:

Applied Mathematics, 1, 2, 3, 4, 5, 6.
Engineering, 1*a*, 1*b*, 2, 3*a*, 3*b*.
Physics, 7 and 6, or 7 and 3.
Chemistry, 1 and *a*.
Metallurgy, 11*c*.
Electrical Engineering, 1.

Students entering with advanced credit may also elect such other work as time and preparation permit.

1. Shop Work.

a. Woodworking.—(Three exercises a week, half year.)

b. Pattern-Making.—(Three exercises a week, half year.)

c. Forge Work.—(Three exercises a week, half year.)

d. Foundry Work.—(Three exercises a week, half year.)

e. Machine Shop Work.—(Three exercises a week, through the year.)

Open to all students, and required of students in Mechanical Engineering. 3 hrs., each semester

(Browne, Peterson, Stanley, Liggett, Palmateer)

2. Elementary Machine Drawing.—This work consists of practice in making freehand sketches of machine parts from which working drawings, tracings, and blueprints are developed. (Six hours a week in drafting-room.) Open to students who have completed course 1*a* in Engineering.

2 hrs., either semester (Gaither)

3. Elementary Machine Design.

a. Function of machines; motion, force, and work in machines. (Three hours a week, lectures and recitations, second semester.)

b. A drafting course applying the principles treated in *a*. (Six hours a week drafting, second semester.)

c. An abridged drafting course intended for major students in Geology and Mining. (Three hours per week; one hour of credit.)

Open to students who have completed course 2 in Mechanical Engineering and course 1*b* in Engineering. Either *b* or *c* must be taken in connection with *a*. *a* and *b* are required of students in Mechanical Engineering.

4 or 5 hrs., 2d semester (G. H. Marx)

4. Machine Design.—Study of machine details, such as fastenings (including riveted joints and boiler design); shafting and spindles; journals, boxes, and lubrication; ball and roller bearings; sliding surfaces; couplings and clutches; gear, belt, rope, and chain transmission systems; flywheels; springs; frames; and supports. (Two hours a week recitations and lectures, six hours in the drafting-room, throughout the year.) Open to students who have completed course 3 in Mechanical Engineering, and who are taking course 2 in Engineering; required of students in Mechanical Engineering.

4 hrs., both semesters (G. H. Marx)

5. Advanced Machine Design.—A drafting-room course consisting of the design of complete machines. Intended for fourth-year students who have completed courses 4 and 6.

2 hrs., both semesters (G. H. Marx)

6. Heat Engines.—Mechanical theory of heat and its applications. (Two lectures and three hours office work per week.) Required of third-year students in Mechanical Engineering.

3 hrs., both semesters (Durand)

7. Thermodynamics.—A course in theoretical thermodynamics, with special reference to heat engines, and intended to supplement course 6 which is a prerequisite. Required of fourth-year students in Mechanical Engineering.

2 hrs., 1st semester (Durand)

8. Experimental Engineering.—Mechanical Laboratory. Calibration of apparatus; testing of steam engines and turbines; condensers, gas, oil, and hot-air engines; pumping machinery; boilers, economisers and heaters, blowers and fans, injectors, fuels, refrigerating machinery, etc., and the experimental investigation of correlated problems. (One lecture and six hours in the laboratory per week.) Open to students who have completed course 6, and required of fourth-year students in Mechanical Engineering.

3 hrs., both semesters (Eckart)

9. Pumping Machinery.—A lecture course for fourth-year students. Open to students who have taken course 6, first semester. 2 hrs., 2d semester (DURAND)

10. The Mechanical Engineering of Central Power Stations.—A lecture course open to students who have completed course 6. 2 hrs., 2d semester (DURAND)

Shop and Laboratory Fees

Courses 1*a* and 1*b*, three dollars each; courses 1*c*, 1*d*, and 1*e*, four dollars each; course 8, four dollars per semester.

III. ELECTRICAL ENGINEERING

HARRIS JOSEPH RYAN, Professor.
KENNETH LIVERMORE CURTIS, ——— ———, Instructors.

The courses specified below represent the major work for the undergraduate degree with Electrical Engineering as major subject. In addition, the typical work for this major includes the following courses in other departments:

Applied Mathematics, 1, 2, 3, 4, 5, 6.
Engineering, 1*a*, 1*b*, 2, 3*a*, 3*b*.
Mechanical Engineering, 1, 2, 4, 7, 8, 10.
Physics, 7, 6, 9.
Chemistry, 1 and *a*.

Students entering with advanced credit may also elect such other work as time and preparation permit.

1. Electrical Machinery.—This course is intended for students desiring a brief and very general course in electrical work. Three hours lecture and recitations, with three hours of laboratory work. Courses 1, 2, 3, 4, 5, and 6 in Applied Mathematics, and course 7 in Physics, prerequisite. 4 hrs., 1st semester (CURTIS)

2a. Continuous Current Theory.—The study of the physical theory, actions and reactions in the armature, magnetic principles, and windings of continuous current dynamos and motors. (CURTIS)

2b. Alternating Current Theory.—The general elementary mathematical theory of alternating currents; the theory of alternate current dynamos, motors, rotary and static transformers. Polyphase systems and dynamos. Graphic and analytic methods. Courses 1, 2, 3, 4, 5, and 6 in Applied Mathematics, and course 7 in Physics, prerequisite. 3 hrs., both semesters (CURTIS)

3. Continuous Current Measurements.—The calibration and use of ammeters, voltmeters, wattmeters, photometry of incan-

descent and arc lamps. Systematic tests on continuous current dynamos and motors. Laboratory and factory methods of testing. To be taken with course 2.

2 hrs., both semesters (CURTIS, ———)

4. Advanced Alternating Current Theory.—Discussion of the theory of alternating current dynamos, motors, transformers, polyphase systems, long-distance line problems, etc. Courses 2 and 3 prerequisite. 3 hrs., both semesters (RYAN)

5. Alternating Current Testing.—Systematic tests on alternators, synchronous motors, rotaries, transformers, and induction motors. Laboratory and factory methods of taking and recording results. High voltage testing of oils and insulators. To be taken with course 4.

2 hrs., both semesters (CURTIS, ———)

6. Design of Electrical Machinery.—Lectures on factory methods of design of continuous and alternating current machinery. Discussion of the causes affecting regulation, output, etc., of the various types. (Lecture two hours per week, drafting, three hours.) Course 2 prerequisite.

2 hrs., 2d semester (RYAN)

7. Electric Transmission.—Lectures on the design and management of station dynamos, switch-boards, transformers, the line, substations and distribution circuits for the long distance transmission of power. To be taken with courses 4 and 5.

1 hr., both semesters (RYAN)

8. Technical Seminary.—This course will consist in the discussion of recent technical literature; mainly the reading and discussion of American Institute papers before the local branch.

1 hr., both semesters (RYAN)

In connection with Course 8, it is aimed to have as many special lectures as possible. In connection with course 7, a series of tours is taken to San José, San Francisco, Oakland, etc., for the purpose of studying practical installations.

The Department acknowledges free copies of the following journals:

The Electrical World and Engineer, New York; *The Western Electrician,* Chicago; *The Street Railway Journal,* New York; *Electricity,* New York; *American Electrician,* New York.

Laboratory Fees

Two dollars per hour of university credit.

IV. MINING ENGINEERING

[See announcements of Department of Geology and Mining, pp. 134-137.]

V. CHEMICAL ENGINEERING

[See announcements of the Department of Chemistry, pp. 116-121.]

MANUAL TRAINING

EUGENE SOULE, Foreman.

The work in Manual Training consists of lathe work, bench work, carving, varnishing and polishing, burnt work, etc. Fifty hours of actual shop practice are required for one hour of credit. Shop fee, three dollars. 1 hr., each semester

THE UNIVERSITY LIBRARY

Melvin Gilbert Dodge, Associate Librarian.
Lillian Pearle Green, Reference Librarian.
Florence Hughes, Cataloguer.
Alice Newman Hays, Classifier.
Martha Elizabeth Haven, Supervisor Accessions Department.
Harriette Miles, Supervisor Department of Serials.
Belle Heber Thompson, Chief Loan Desk Assistant.
Elizabeth Hadden, Helen B. Sutliff, Cataloguers.
George Gustav Altnow, Mildred Irene Crosier, Benjamin Clifford Dey, Paul Carroll Edwards, Ruth Hughes Gilbert, Anna Gertrude Hall, Frederic Rodgers Lanagan, Carl Augustus Lantz, Herbert Harris McLean, Paul Edward Millar, Letitia Patterson, Helen Waterman Rolfe, John Elmer Stewart, Assistants.
William Elbridge Billings, Emmet Cloyd Rittenhouse, Omar Corwin Spencer, Assistants in Law Library.

The Library is open every University week day from 8 a. m. to 10 p. m., and on Saturday and during the shorter vacations from 8 a. m. to 3:30 p. m. Special hours are arranged for the summer vacation. Officers of the University, and students engaged in advanced work, upon recommendation of their instructors, have access to the shelves. Books that are not needed for special reference work are loaned for home use for a limited period. A new card-catalogue (author, title, and subject), is being prepared. The cards for the sections of bibliography (including periodicals), philosophy, religion, sociology, history (including biography), and literature are already completed.

The Library now numbers eighty-four thousand volumes. During the year ending July 31, 1904, there were added 4,956 volumes. Of these, 1,826 were by gift, the most notable being from Mr. Thomas W. Stanford, President David S. Jordan, Mr. Timothy Hopkins, Mr. Charles G. Lathrop, Mrs. L. K. Mathews, and Mr. J. P. Henck.

The Library contains the following special collections:

The Timothy Hopkins Railway Library of six thousand vol-

umes. This collection is unusually rich in material for the study of the early history of railways in Europe and America, and the donor has made provision for the maintenance and increase of the collection. A catalogue of the library has been published.

The Thomas W. Stanford Australasian Library of several thousand volumes and pamphlets relating to Australasia.

The Hildebrand Library, consisting mainly of works on Germanic Philology and Literature collected by the late Professor Hildebrand of Leipzig.

The David Starr Jordan Library of Zoology, consisting of several thousand books and pamphlets on fishes.

In addition to the University Library, various large collections within reach are available for reference, including the Free Public, Mechanics' Institute, and other libraries in San Francisco. There are also at the University several private libraries to which advanced students have access. Notable among these is Dr. Branner's Geological Library, a list of whose periodicals has been added to the University Library catalogue.

Course in Bibliography

General Bibliography.—The aim of this course is to give practical aid to students in the preparation of Bibliographies. Bibliographical method, the bibliographies of special subjects, and the principal books of reference will be discussed, and individual work carried out under direction in the University Library.

2 hrs., 1st semester (Dodge)

LELAND STANFORD JUNIOR MUSEUM

Harry C. Peterson, Curator.
Edwin Alonzo Austin, Assistant Curator.
Bunkichi Shibata, Museum Assistant.
George Merrick Herron, Alexander Henry Lidders, Oswald Swinney Lousley, Assistants.

In 1880, Leland Stanford, Junior, then eleven years of age, accompanied his parents on a trip through Europe. During this journey he purchased mementoes of the various places visited—at first merely with the object of having a collection to recall the pleasures of his European trip. Later he became ambitious to broaden his collection, and in 1883, on a second trip to Europe, he began to pursue his archæological researches and acquisitions with the idea of finally establishing a great museum. The Leland Stanford Junior Museum was designed by Mrs. Stanford as a memorial to perpetuate this idea, and the large and valuable additions to the original collection are mainly her gift to the Museum.

The main building is of Grecian architecture, built of solid concrete, and absolutely fireproof. The cornerstone was laid May 14, 1891, the Museum being opened to visitors in 1894. In 1898 two large annexes were begun, and finished the year following. In 1902 contracts were let for the completion of the building. When finished the available exhibition floor space will be over 200,000 square feet, with 90,000 square feet for storage purposes.

The doors are of beaten bronze, being made especially for the Museum, and patterned after the famous bronze doors in Florence, Italy. The facing of the vestibule is of a composite marble from the quarries in the Sierra Nevada Mountains in Amador County, California.

The collection made by Leland Stanford, Junior, between 1880 and 1884, has been placed in two rooms (A and B), and in room A his own arrangement is reproduced in every detail, including

all the labels written by himself. In the room adjoining (B) are found many interesting mementoes of his early life. These two rooms are especially rich in Egyptian bronzes, Tanagra figurines, Greek and Roman glass, armor, mosaics, Sèvres and Dresden ware, etc. Owing to lack of space, additional material belonging to this room has been placed in room T. It includes the "locomotive" hand-car and trailer, buggies, fire-engine, boat, etc., all being the personal belongings of Leland Stanford, Junior.

The Memorial room (O) was designed to contain the many personal mementoes of Senator and Mrs. Stanford. Here are found ancestral portraits of the Stanford and Lathrop families; two cases devoted to the Grant family collection; racing trophies; Muybridge's first photographs of "Animals in Motion," and subsequent works; the "Last Spike," and other historical relics of the Central Pacific Railroad. To Mrs. Stanford is due the large assortment of beautiful rare lace—Point, Alençon, Chantilly, Duchesse, Honiton, Valenciennes, and others; also rare India shawls, fans, Worth dresses, antique jewelry, and European souvenirs.

The vestibule and upper corridor are devoted principally to statuary, old and rare books, papers, etc., including Duc de Loubat's famous reproductions of Aztec and Mexican manuscripts, a 16th century illuminated Turkish Koran of great value, Lord Kingsborough's "Antiquities of Mexico," and German engravings.

The Di Çesnola Collection (rooms C and E) contains five thousand pieces of Greek and Roman pottery and glass from the Island of Cyprus. A portion of the Greek and Roman materials recently gathered by Mrs. Stanford has been placed on view in room D. It includes rare iridescent glass, Etruscan vases, Roman lamps, sculptured marble heads, and bas-reliefs of the first century. The Pompeian and Venetian cases are being arranged as fast as the articles arrive from Europe.

Room F contains a valuable collection of Venetian glassware and chandeliers, mirrors, and mosaic art pieces, all the gift of Messrs. Salviati & Camerino, of Venice, Italy.

Rooms G and H will be devoted exclusively to Egyptian and kindred collections. They are especially complete in mummies, sarcophagi, responders, scarabs, beads, amulets, pottery, and mummy cloth embroideries, the latter the gift of Mr. Timothy Hopkins. Dr. W. M. Flinders Petrie and Mr. H. W. Seton-Karr are represented by several cases of valuable material. Mrs.

Anna Lathrop Hewes contributed a large collection of varied and valuable objects. Among the recent additions (room H) may be mentioned the famous Kyticas Collection of veritable Egyptian antiquities, embroideries, beads, Palestine costumes, rare Sudanese and Bisherin armor, the Brugsch Bey collection of bronzes, terra cottas, porcelains, etc.—all the gift of Mrs. Stanford.

The American Collection (I) is made up of mound relics, Indian baskets, Acoma ware, utensils, Alaskan canoes, totem poles, etc. In this room is also a display of material of the stone age, purchased by Mrs. Stanford in Copenhagen, Denmark.

In room J is installed the Corean Collection presented to the Museum by Mr. Timothy Hopkins. Many specimens of native dress, household utensils, sleeping mats, chests, shoes, and art products are included in the display. With them is also a set of woven embroidery samples, extending over several centuries, complete sets of which it is now impossible to obtain. The Corean and Japanese screens are very old and unique.

In the Chinese and Japanese room (K) there is a rich collection of bronzes, arms, china, lacquer, cabinets, musical instruments, rich embroideries, and specimens of wood-carving, including the Imperial bedroom set, a marvel in wood-carving and inlaid work.

In room L will be found the result of Mrs. Stanford's purchases for the Museum during her visit to Hawaii and Japan in 1902. The collection is particularly rich in cloisonne, Satsuma, porcelain, embroideries, Buddhistic images, and ivory carvings. The large bronze Koro, which is over 300 years old, in the center of the room, is one of the finest in the United States.

The South Sea Island and India material secured by Mrs. Stanford in the fall of 1903 has been placed in room M. It is rich in embroideries, tapa cloth, silver, brass, ebony, and ivory carved ware, and native utensils. It includes also a choice collection of Samoan relics and war implements, given by President Jordan.

Room N contains the famous Ikeda Collection of Chinese and Japanese art antiques, comprising pottery, porcelains, jade, ivories, cloisonne, crystals, bronzes, armor, lacquer ware, kakimonos, and screens. This is one of the richest collections of Chinese and Japanese art material in the United States, and was secured for the Museum by Mrs. Stanford during the summer of 1904.

The Fine Arts Collections (rooms P, Q, R, S, T, U, and V) have been gathered mainly by Mrs. Stanford. A very full exhibit of copies of the old masters, especially Madonnas, has been hung in room U, while in room T will be found the famous Ford Collection of California Mission paintings, twenty-four in number. At the present time there are over five hundred paintings in the Museum, including pictures by Meissonier, Bouvier, Bonnat, Richter, Carolus-Duran, Van Wyck, Bierstadt, Ch. Landelle, Courtois, Piot, Munier, Brozik, Ricci, Humphrey Moore, Porteilje, Goodwin, Bradford, E. Paoletti, Mazzoni, Keith, Hill, Charles Nahl, and many others. "The Bridal Veil Falls of the Colorado River," by C. T. Wilson, is the gift of Mr. Charles G. Lathrop. The Anna Lathrop Hewes collection of paintings, statuary, mosaic, etc. (room V), and a collection of pictures in oil (room Q), presented by the Hon. Thomas Welton Stanford, of Australia, are also noteworthy. The ceramics collected by Mrs. Stanford include Sèvres, Dresden, Royal Berlin, Persian, Pompadour crystal, Bohemian, Venetian, and numerous other wares.

In the Natural History Department, temporarily placed in room Y, there is a large collection of birds' eggs and skins, donated by the late Thomas Flint, of San Francisco. With them is a collection of mounted mammals, the most important being a series of the fur seals of the Pribilof Islands, presented by President Jordan. The nucleus of a mineral exhibit is in room X.

The Stanford Historical Collection is now being gathered, and is for the present installed in room T. Many of the original sketches of the competitive plans of the University are here, including the large bird's-eye view of the accepted plans by Shepley, Rutan, and Coolidge, of Boston, Mass. A full-sized photographic reproduction of the Endowment Grant, presented by Crothers and Crothers; early photographs of construction, etc. Articles especially desired are photographs of University life and incidents from 1887 to date; also lithographs, illustrations, press clippings, programs, souvenirs, copies of University publications, Quads, etc.

The Palo Alto Stock Farm exhibit is placed in room T, and contains all the records, catalogues, data, and library of the Farm; photographs, oil paintings, etc., of celebrated horses; mounted skeletons of Occident, Electioneer, and Palo Alto; the greatest and last of the high-wheeled sulkies; as well as other articles associated with the history of the Stock Farm.

Through the courtesy of Wells, Fargo & Co., all gifts intended for the Museum will be transported free of charge over their lines, in shipments of fifty pounds or less, from railroad points in California, Oregon, and Nevada, if addressed to The Curator, Leland Stanford Junior Museum, Stanford University, California.

The Museum is open to visitors daily from 10 a. m. to 5 p. m., Sundays excepted.

THE MEMORIAL CHURCH

The Rev. David Charles Gardner, Chaplain.
Benjamin Colman Blodgett, Organist.

The Memorial Church, erected by Mrs. Stanford "to the glory of God and in loving memory of my husband, Leland Stanford," was dedicated January 25, 1903. The building stands in the center of the inner quadrangle group facing the main entrance. It is of modified Moorish-Romanesque architecture, and in the form of a cross with rounded ends. The extreme length, through vestibule, nave, and apse, is one hundred and ninety feet; the extreme width, through transept wings, one hundred and fifty-five feet. The four gables of nave, transept wings, and apse are united by a twelve-sided belfry tower, whose spire, surmounted by a cross, rises to a height of one hundred and eighty-eight feet. Exteriorly the tower is flanked upon the four corners by turrets rising from the angle between the gables. It is engirdled at the base by an outside gallery, and is strengthened by an effective use of the flying-buttress. The tower contains the clock with its four faces, a chime of four bells, tuned to correspond with the Westminster chimes, and twenty-four pictorial windows. The church is built of buff sandstone, rough-hewn, with tooled face on the inside, relieved by elaborate carved designs and fifteenth-century mosaics of great beauty. The features of the apse are the marble altar with its candelabra, life-size marble figures, and bas-relief of Gulio Ciseri's painting of "The Entombment," the three great stained-glass windows, the marble statues of the twelve apostles, and the mosaics covering the entire wall surface. Behind the altar is a replica of Cosimo Rosselli's "Last Supper," from the Sistine Chapel at Rome. To the right and left, running to the arch of the apse, are long panels, a *gloria dei angeli,* surmounted by reproductions, in mosaic, of Michael Angelo's prophets. The cove ceiling, springing from the crown of the great arches, is also done in mosaic representing angels with trumpets. This cove-ceiling narrows to a thirty-two foot open circle, and through this is seen the frescoed ceiling of the true dome, one hundred and six feet above the floor. The nine-

teen large stained-glass windows of nave, transept, and apse, in a series of appropriate designs, illustrate the life of Christ. The windows of the clerestory contain single figures of Old and New Testament characters. Above the organ gallery is the great rosette window with Hoffman's Christ child as a center picture. Flanking the rose window is the organ, separated into two parts, with the console near the center of the gallery rail. The organ has forty-six stops and nearly three thousand pipes, and the several parts are connected and operated by electricity. The seating capacity of the Church, including galleries, is about seventeen hundred.

The Memorial Church is non-sectarian in character and method. It is bound by no sectarian creed, or book, or polity; at the same time it is linked to historic Christianity through its ministry and sacraments. The services are informal and varied, following no particular liturgy, and yet conserving the great principles of Christian worship. The sacrament of the Lord's Supper is administered on the first Sunday of each month, and to this the Church invites "all them that love the Lord Jesus Christ in sincerity and truth."

Baccalaureate Sermon—May 15, 1904

The Rev. Bp. DANIEL A. GOODSELL, D. D.—*The Growing Life.*

Special Preachers, 1904-05

The Rev. JOHN W. DINSMORE, D. D., San Jose.
The Rev. FRANCIS PALMER, San Jose.
The Rt. Rev. WILLIAM FORD NICHOLS, D. D., San Mateo.
The Rev. E. R. DILLE, D. D., Oakland.
The Rabbi JACOB VOORSANGER, D. D., San Francisco.

UNIVERSITY LECTURES, ETC.

Public lectures on subjects of general interest, by members of the Faculty or by persons invited from abroad, are given from time to time. The following is the list of such lectures for the calendar year ending March, 1905:—

Miss Gail Laughlin—*The Progress of Government.*

Dr. W. C. Harris, late United States Consul to Japan—*The Russo-Japanese War and Some Problems of the Far East.*

Dr. George Steindorff, University of Leipzig—*The Views of the Ancient Egyptians on Life After Death.*

Dr. J. G. Rodger—*Does Science Furnish a Basis for Religion?*

The Rev. Henry Frank—*The Russo-Japanese War.*

Signor Brunialti, Italy—*Ancient and Modern Rome.*

Professor Melville Best Anderson—*Much Ado About Nothing.*

Hon. Simon Wolff, late Consul-General to Egypt—*Causes for the Decline of Egyptian Civilization.*

Mr. Ben Greet, London, England—*The Drama.*

Dr. Kakichi Mitsukuri, Imperial University of Tokyo—*Manchuria and the Eastern War.*

Mr. Arthur Farwell, Philadelphia—*American Music.*

Dr. Doremus Scudder—*God's Hand in Our Mid-Pacific Paradise.*

Dr. C. Hart Merriam, U. S. Department of Agriculture—*Recent Work of the United States Biological Survey.*

Mr. Poultney Bigelow, Boston, Mass.—*American Expansion in the Pacific.*

The Rev. Newman Hall, Wellington, New Zealand—*Irish Life and Character.*

Musical Recitals, Etc.

1. Presentation of *The Jealous Wife* by the Mask and Dagger Dramatic Society of the University of California.
2. Concert by Madame Schumann-Heink.
3. Combined concert by the California and Stanford Mandolin and Glee Clubs.
4. Presentation of Shakspere's *Much Ado About Nothing* by the Ben Greet Company.

5. Presentation of Shakspere's *Hamlet* by the Ben Greet Company.
6. Presentation of Sheridan's *The Rivals* by the Sophomore Class.
7. Concert by Creatore's Italian Band.

University Assemblies

1. The Rev. Lyman Abbott, D. D., New York—*Knowledge and the Power to Use It.*
2. Mr. Alfred W. Cooley, United States Civil Service Commissioner—*The Work of the Civil Service Commission.*
3. Mr. John McNaught, San Francisco—*Journalism as a Profession.*
4. President David Starr Jordan and Mr. Arthur M. Dibble.
5. President David Starr Jordan and Assistant Professor William Cullen Dennis.
6. Commander C. T. B. Moore, *U. S. N.—The Organization and Achievements of the Navy.*
7. Professors Thomas Walker Page and Adolph Caspar Miller, University of California.
8. Rabbi Jacob Voorsanger, D. D., San Francisco—*The Life and Character of Joseph Le Conte.*
9. Mr. Jacob Riis, New York City.
10. Professor John Casper Branner and Associate Professor Simon James McLean.
11. President Benjamin Ide Wheeler, University of California, and Judge William W. Morrow, San Francisco.

Commencement Address—May 18, 1904

Dr. Orrin Leslie Elliott—*The Higher Education and Progress.*

INTERCOLLEGIATE DEBATES

An Intercollegiate Debate, under the auspices of the Associated Students of the University of California and of the Leland Stanford Junior University, is held in San Francisco in April of each year.

The question for 1905 is, *"Resolved,* That the Interstate Commerce Commission shall be given power to fix and enforce railroad rates."

The Stanford Contestants are Raymond Griffin Barnett, Dudley Daniel Sales and Alexander Sheriffs; alternate, Edward Anthony Cunha.

Carnot Debate

The Carnot Medal, presented by the Baron de Coubertin, for the purpose of encouraging the study and discussion, in California, of French history and politics, is awarded annually to the student who, in the opinion of the judges, proves himself the best debater in a contest held for the purpose between Stanford University and the University of California.

Under the rules for 1905 a general subject for the debate was announced November 15, 1904, but the particular phase of the question, as embodied in a resolution, was not made known to the contestants until two hours before the time set for debate.

The general subject for 1905 was the Relations of Church and State in France Since 1801, and the particular question debated was, *"Resolved,* That the policy of the late Combes Ministry, in respect to the relations of Church and State, was wise." The debate was held at Stanford University, February 3, 1905. The contestants were E. Carleton Baker, Maurice E. Harrison, and William J. Musgrove, of the University of California; and Raymond Griffin Barnett, Dudley Daniel Sales, and Alexander Sheriffs, of Stanford. The judges were President Morris E. Dailey, of the San Jose State Normal School, Professor Louis Lisser, of Mills College, and the Rev. George W. Stone, of Oakland. The medal was awarded to Alexander Sheriffs, of Stanford University.

Nevada Debate

By an agreement entered into between the students of the Nevada State University and of Stanford University two annual

debates have been arranged between representatives of the two universities, the first to be held at Reno, Nevada, April 22, 1905. The subject chosen for discussion is as follows: *"Resolved,* That laws relating to marriage and divorce should be uniform throughout the United States, and that for this purpose Congress should by Consitutional amendment be given power to pass such laws."

The Stanford Contestants are William Leeper Blair, Arthur McQueen Dibble, and Charles Sumner Osgood; alternate, Arthur Ransford Fletcher.

The Bonnheim Ethical Dissertations and Discussion

The purpose of the Bonnheim dissertations and discussion, as defined by the founder, Mr. Albert Bonnheim, of Sacramento, is as follows: "It is not so much desired to obtain new facts or new truths in ethics as it is to place the truth which we now have before as many students as possible, so that they will take greater interest in questions dealing with ethical problems." The competition is open to all undergraduate students of Stanford University, and is divided into two parts:

1. The Bonnheim Dissertations.—The general subject for 1905 is "The Ethics of Monopolistic Control of Industry." Each competitor must deposit with the Registrar an essay upon this subject on or before November 6, 1905. The essays should not be signed, but should have some mark of identification and be accompanied by a sealed envelope containing the name of the author. They must be typewritten on thesis paper of regulation size. They should be preceded by an outline and a bibliography, and should have accurate references. No limit of length is prescribed, but a treatment not to exceed ten thousand words is recommended. The judges will announce the names of the five competitors who present the best Bonnheim dissertations by November 20, 1905, and to as many of them as shall be deemed meritorious will be awarded premiums of $20 each.

2. The Bonnheim Discussion.—The winners of the Bonnheim premiums for dissertations shall be qualified to engage in the discussion which will be upon the same subject as the dissertations. This discussion will take place December 8, 1905. The Bonnheim prize of $150 will be awarded to the speaker who in his discussion of the subject shows the clearest insight and makes the most effective presentation. Each speaker will be allowed twenty minutes.

UNIVERSITY ASSOCIATIONS

Philological Association

Professor Henry Rushton Fairclough, *President.*
Dr. Benjamin Oliver Foster, *Secretary.*

The University Philological Association was organized September 17, 1892, for the purpose of reading and discussing the results of scientific investigations in language and literature. The membership consists of the instructors and advanced students in the different language departments in the University. The regular time of meeting is the first Thursday of each academic month, excepting September, January, and May, at 2:30 p. m. The following papers were presented during the calendar year ending March, 1905:

April 14, 1904. Dr. Benjamin Oliver Foster—*Word Accent in Latin Verse.* Professor Julius Goebel—*The Etymology of Mephistopheles.*

September 1. Professor John Ernst Matzke—*The Sources and Composition of Ille et Galeron.*

November 3. Professor Julius Goebel—*Neo-platonic Influences in Faust.*

December 1. Associate Professor Oliver Martin Johnston—*The Sources of the Spanish Ballard of Don Garcia.* Mr. Ernest Whitney Martin—*Note on the Etymology of Luscinia.*

February 2, 1905. Associate Professor Ephraim Douglass Adams—*Richelieu's Attitude Toward Learning.* Assistant Professor Colbert Searles—*Scarron's Contributions to the History of the French Stage in "Le Roman Comique."*

March 2. Professor Ewald Flügel—*Plan of the Chauser Dictionary.* Assistant Professor Colbert Searles—*Boiardo, First of the Noble Cantastorie.*

The Science Association

Associate Professor Edward Curtis Franklin, *President.*
Assistant Professor Frank Mace MacFarland, *Vice-President.*
Assistant Professor Clara S. Stotenberg, *Secretary.*

The Science Association was organized January 17, 1894. Original investigation and papers of general interest on scientific topics are presented from time to time.

The following papers were read before the Association between April, 1904, and April, 1905:—

Assistant Professor John Otterbein Snyder—*An Undescribed Optical Structure.*

Assistant Professor James Rollin Slonaker—*Comparative Sight in Vertebrates.*

Mr. Luther Burbank—*Heredity and Plant Breeding.*

Mr. Edwin Chapin Starks—*Sea Lions of the California Coast.*

Associate Professor William Freeman Snow—*Some Applications of Science to the Commercial Demands of Medicine.*

Professor John Maxson Stillman—*Catalytic Action.*

THE HOPKINS LABORATORY

Professors Charles Henry Gilbert and Oliver Peebles Jenkins, Directors.

The Hopkins Seaside Laboratory, founded by the liberality of Mr. Timothy Hopkins, of San Francisco, is an organic part of the University, and constitutes a summer session for advanced biological study. The buildings are located at Pacific Grove, two miles west of Monterey, and stand on a low bluff immediately facing the sea. They consist of two two-story structures capable of accommodating about eighty students, and contain four general laboratories, one lecture-room, seventeen private rooms for special investigators, and a dark-room for photography. They are provided with aquaria, running water, and all necessary facilities for biological study. The library and apparatus of the University are available for use in the Laboratory.

Session of 1905

The Fourteenth Session will begin Monday, June 5th, and will extend over a period of six weeks, closing Saturday, July 15th. The laboratory will be under the general supervision of Associate Professor George Clinton Price. Regular courses of instruction will be offered as follows:

1. **General Zoology.**—Open to all University students. (Price)

2. **Zoology, Advanced Course.**—Open to students who have had course 1 in Zoology, Physiology, or Botany, or an equivalent. (Price)

3. **The Physiology of the Sense-Organs of Invertebrates.** (Jenkins, Slonaker)

4. **The Comparative Histology of Invertebrates.** (McFarland)

5. **The Nudibranchs.**—Advanced Course. (McFarland)

Laboratory Fee

Thelaboratory fee is twety-five dollars.

CATALOGUE OF STUDENTS

NAME	RESIDENCE	MAJOR SUBJECT
Abbott, Alden Harold,	Campbell,	History
Abbott, Frank Howard,	San Francisco,	Economics
Abel, Lena Mignon,	Salinas, Kans.,	German
	A. B., University of Kansas, 1902.	
Ackerman, Irving Charles,	San Francisco,	Law
Adams, George Karrick,	Palo Alto,	English
Adams, Irving W.,	Palo Alto,	Mechanical Eng.
Adams, Mame,	Hiawatha, Kans.,	English
	A. B., Stanford, 1905.	
Adkinson, Laura Ruth,	Chicago, Ill.,	French
Agnew, Thomas Hugh,	Rockford, Ill.,	Civil Eng.
Ainsworth, Howard Dearborn,	Minneapolis, Minn.,	Geol.-Min.
Albrecht, Gertrude,	San Francisco,	Law
Alder, Margueritte,	Redlands,	Greek
Allen, Alice Mabel,	Adams, N. Y.,	Botany
Allen, Ben Shannon,	Woodland,	Law
Allen, Chester Boyce,	San José,	Geology and Mining
Allen, Genevieve,	Palo Alto,	Chemistry
Allen, Lily Burch,	Stanford Univ.,	Physiology *Sp.*
Allis, Clarence Livingston,	Alhambra,	Geol. and Mining
Allmond, Mary Helen,	Seattle, Wash.,	English
Almind, Anna Lavonia,	Long Beach,	Chemistry
Altnow, George Gustav,	Seattle, Wash.,	Philosophy
Alward, Roy Carleta,	Fredericton, N. B.,	Law
Ambrose, Oliver Stephens,	Lockeford,	Electrical Eng.
Ames, Alden,	San Francisco,	Law
Anderson, Bonnye,	Los Angeles,	English
Anderson, Charles William,	Ottumwa, Iowa,	Economics
Anderson, Robert Van Vleck,	Menlo Park,	Geology
Andrews, Elizabeth Melvina,	Corona,	English
Anju, Shohachi,	Saga, Japan,	Economics
Anthony, Edith Anne,	Pacific Grove,	Mathematics
Applegate, Bessie Bell,	Klamath Falls, Ore.,	German
Ariake, Bunkichi,	Oakland,	Zoology
Ashton, George Humboldt,	Palo Alto,	Electrical Eng. *Sp.*

Atherton, Cecelia Freeman, Lakeport, History
A. B., Stanford, 1904.
Atkinson, Mattie, Santa Clara, English
Atterbury, Charles Delaplane, San Diego, Civil Eng.
Atwood, Clarence Goodrich, Monrovia, Law
Austin, Edwin Alonzo, Stockton, Mining Eng.
Austin, Reginald, San Francisco, Chemistry
Avery, Lucien Delos, Ft. Collins, Colo., English
Avery, Noyes Latham, Grand Rapids, Mich., Econ.
A. B., Stanford, 1905.
Avery, Paul W., Washington, D. C., Chem. Eng.
Ayer, Francis Ashton, Saranac Lake, N. Y., Chemistry
Aynesworth, George Levin, Palo Alto, Law *Sp.*
Babcock, Harry Jaynes, Tolland, Conn., Civil Eng.
Bailey, Laura Chapin, San José, Economics
Bairos, Manuel Benjamin, Biggs, Chemistry
Baker, Anne Hollis, San Francisco, English
Baker, Mary Caroline, Point Loma, Zoology
Baker, Robert Henry, Point Loma, Mechanical Eng.
Balcomb, Mary Florence, Palo Alto, English
Baldwin, Grace Sarah, Ontario, History
Ball, Chester Alexander, Woodland, Law
Ball, Gerald, Woodland, Civil Eng. *Sp.*
Balsbaugh, Mary Alice, Palo Alto, Latin
Bandini, Ralph, Pasadena, Law
Bansbach, Louis Philip, Denver, Colo., History
Barbaree, Theophilus Horatio, Milton, Ontario, Mathematics
Barbour, Nathan Powell, Lockeford, Chemistry
Barbur, LeRoy Wright, Los Angeles, Geol. and Min.
Barcus, J. Franklin, Los Angeles, English *Sp.*
Barkan, Hans, San Francisco, Physiology
Barkelew, Trimble, Los Angeles, Mech. Eng.
Barnett, George DeForest, Santa Rosa, Chemistry
Barnett, Lelia Jefferson Harvie, Stanford Univ., Mathematics
A. B., Cornell University, 1901.
Barnett, Mary Paulding, Palo Alto, Latin
A. B., University of Kansas, 1897.
Barnett, Raymond Griffin, Kansas City, Mo., Law
Barret, Grace Ligon, Redwood City, German
Barrett, Richardson Damon, Herman, Minn., Economics
Barrett, Richard Watts, Stanford University, Law
A. B., Stanford, 1904.

Bartell, Max John, Stockton, Geology and Mining
Barton, Jesse Billings, Jr., Hinsdale, Ill., Civil Eng.
Bartruff, Jeannette Eleanor, Palo Alto, Latin
Bateman, William George, Salt Lake City, Utah, Chem.
Bates, Callie Hildred, Lawrence, German
Bates, Frank Thomas, Rialto, Law
Baum, Mabel Helen, Denver, Colo., Romanic Lang.
Beal, Charles Laurant, Palo Alto, English *Sp.*
Bean, Jane Louise, San José, History
A. B., Stanford, 1905.
Beans, Eulalie Wentworth, Los Angeles, English
Beard, Ethel Grace, Modesto, German
Beardsley, Charles Alexander, Campbell, Law
Beasley, Etta Goldie, Modesto, Physics
Beattie, William Alfred, Campbell, Economics
Beckwith, Henry Truman, Providence, R. I., Geol.-Min.
Beckwith, William, Providence, R. I., Mech. Eng.
Bee, Charles Everett, Cupertino, Mechanical Eng.
Beebee, Ralph Augustus, Gridley, Civil Eng.
Beeger, Gertrude Margaret, Redwood City, German
Beeger, Pauline Marie, Redwood City, Physiology
Beggs, Lulu Mabel, Los Gatos, English
A. B., Stanford, 1905.
Behlow, William Wallace, Redlands, German
Bell, Eric Temple, San José, Mathematics
A. B., Stanford, 1904.
Bell, Harry Wesley, Healdsburg, Mining Eng.
Bell, John Henry, Palo Alto, Mining Eng.
Bell, Rosa Edith, Santa Rosa, English
Bement, Howard, Stanford University, English
Ph. B., Univ. of Michigan, 1896.
Bennett, Lyman H., Virginia City, Mont., Law
Bennett, Thomas Tankerville, Marshfield, Ore., Law
Bensberg, Mary Louise, Santa Clara, English
Berchtold, Frank Joseph, Petaluma, Electrical Eng.
Bernard, Fred Horton, Tucson, Ariz., Law
Bernard, Joseph David, Los Angeles, Civil Eng.
Berry, Jessie Verna, Alameda, Chemistry
Bertheau, Rudolf César, San Francisco, Law
Best, Alice, Palo Alto, English
Betz, Mary Elizabeth, Spokane, Wash., German
Beyer, Earl Edward, Rochester, Ind., Economics

Beyer, Forrest B., Kendallville, Ind., Economics
Beymer, William Gilmore, Ocean Park, Drawing *Sp.*
Bickel, Karl August, Santa Cruz, English *Sp.*
Bille, Anna Matilda, Palo Alto, German
Bille, Mary Elizabeth, Palo Alto, Mathematics
Billings, William Elbridge, Oakland, Law
A. B., Stanford, 1903.
Binns, Clyde Arthur, Palo Alto, Geol. and Mining
Bird, Jessica, Banning, English
Birmingham, James Everet, Strawberry Valley, Geol.-Min.
Bittner, Harvey Peter, Albuquerque, N. M., German
Blair, William Leeper, San Jacinto, Economics
Bliss, Philip Paul, Santa Cruz, Physiology
Blodget, Hazelton Park, Bakersfield, Economics
Blodget, Percy Langdon, Bakersfield, Mech. Eng. *Sp.*
Blodget, Rush Maxwell, Bakersfield, Law *Sp.*
Blood, Herbert Theodore, Denver, Colo., Law
Blust, Hazel Juliet, Los Angeles, Latin
Blythe, Jeane, Mason City, Iowa, German
Boalt, Gilbert Denison, Palermo, Law
A. B., Stanford, 1903.
Bodley, Grace Majella, San José, History
Boehncke, Paul, Los Angeles, German
Boeke, Alma Marie, Chicago, Ill., English
Boeke, Clara Caroline, Chicago, Ill., English
Bofferding, Aline Elsie, Minneapolis, Minn., Latin
Bogle, Lawrence, Seattle, Wash., Geol. and Min.
Bolton, Florence, Stanford University, German
Bonnell, Cornelia, Palo Alto, Physiology *Sp.*
Bookmyer, Ralph H., Sandusky, Ohio, Law
Booth, John Carlos, Palo Alto, Civil Eng.
Borland, Robert Henry, San Bernardino, Law
Borough, Edwin Wallace, San Francisco, Chemical Eng.
Bothwell, Ina Grace, Salt Lake City, Utah, English
Boulware, Stella, Palo Alto, French
Bounds, Irvin J., Santa Clara, Economics
Bowman, Melville Bryant, San José, Electrical Eng.
Boyce, Edward J., Denver, Colo., Mech. Eng.
Boyd, Ada Howard, Stanford Univ., Mathematics
Boyd, John Duncan, Palo Alto, Elec. Eng.
A. B., Stanford, 1897.
Boyle, Harry, San Rafael, Geology

Boyle, John Lawrence, Raton, N. M., Civil Eng.
Boynton, Julia Salter, Los Angeles, English
Brackett, Ross Dudley, Pasadena, Electrical Eng.
Brackett, William Franklin, Pasadena, Mining Eng.
Braddock, Ralph, Decatur, Ill., English
Bradford, Nanelia Lou-Vee, Palo Alto, Chemistry
Bradley, Clarence Linn, Visalia, Electrical Eng.
Bradley, Nathaniel Forsyth, Visalia, Law
Bradley, William Harold, San Diego, Mech. Eng. *Sp.*
Bradshaw, Blanche, Whittier, German
Braly, Norman B., Palo Alto, Geology and Mining
Brammer, George Edward, Berkeley, Law *Sp.*
Branner, Elsie, Stanford University, History
Braun, Carl Franklin, Cupertino, Mechanical Eng.
Brawley, Lee J., Seattle, Wash., Economics
Brayton, Henrietta Ellen, Palo Alto, Entomology
Bremner, Luella May, Santa Rosa, Entomology
Brennan, James F., San José, Law
Breton, Edith Lillian, Morgan Hill, Botany
Brew, Hal, Puyallup, Wash., Civil Eng.
Britton, George Edward, Lawrence, Latin
Britton, Lewis Henry, Lawrence, History
Brohaska, Catherine Margaret, San José, English
Brooke, Banner Raymond, Portland, Ore., Physiology
Brooks, Margaret Evelyn, Stanford Univ., German *Sp.*
Brooks, Milton Jay, Santa Rosa, Electrical Eng.
Brooks, Ruby Alice, San José, Latin
Brown, Agnes Elizabeth, Palo Alto, English
Brown, Arvin Harrington, Los Angeles, Law
Brown, Edna Lucile, Rockford, Ill., German
Brown, Grace Nims, Palo Alto, Physics
A. B., Stanford, 1902.
Brown, Harold Ralph, San Francisco, Economics
Brown, Martha Jane, Santa Cruz, Chemistry
Brown, Reuben Quincy, Lake View, Mechanical Eng.
Brown, Thomas Bruen, Los Angeles, Geol. and Min.
Browne, Harry Clarence, San Francisco, English
Brownlie, Charlotte Wakerley, Vallejo, German
A. B., Stanford, 1905.
Brua, Elmer George, Rialto, Civil Eng.
A. B., Stanford, 1904.
Brunton, Delburt, Compton, History

Bryan, Barnabas,	Stanford Univ., Geol. and Min.	
Bryan, Norris Pinkney,	Halltown, W. Va.,	Law
Bryant, Claribel,	Sioux City, Iowa,	German
Buckingham, Elizabeth Lee,	Palo Alto,	English
Buckley, Richard O'Donovan,	San Francisco,	Civil Eng.
Buckley, Thomas Mulhall,	San Francisco,	Economics
Bullock, Benjamin James,	Santa Clara,	Mechanical Eng.
Bundy, Eudora Beaufort,	Los Angeles,	Latin
Burcham, John Samuel,	Stanford University,	Zoology
A. B., Stanford, 1902, A. M., 1903.		
Burge, Hazel Delle,	Stockton,	English
Burge, Noel S,.	Stockton,	Civil Eng.
Burke, Charles Victor,	Palo Alto,	Zoology
Burke, William Edmund,	Palo Alto,	Chemical Eng. *Sp.*
Burkhalter, Margaret,	Los Angeles,	History
Burnap, Christine Mary,	Coronado,	History
Burr, Lewis G.,	Denver, Colo.,	Elec. Eng.
Burr, Myron Carlos,	Monrovia,	Civil Eng.
Burr, Walter Gordon,	Monrovia,	Latin
Burritt, Elizabeth Sophia,	Butte, Mont.,	Latin
Bursk, Herbert Lee,	Riverside,	English *Sp.*
Burtis, Prentis Townsend,	San Francisco,	Economics
Bustamante, Luis,	Mexico City, Mex.,	Elec. Eng.
Butcher, Byron Samuel,	Denver, Colo.,	English
Butterfield, Hayden Gearhart,	Cupertino,	Electrical Eng.
Butterfield, Herbert Philip,	Cupertino,	Electrical Eng.
Byrne, Leo Daniel,	San Bernardino,	Law
Byxbee, Ella Frances,	Palo Alto,	Chemistry
A. B., Stanford, 1896.		
Cadwalader, Morris Atwell,	Los Angeles,	Physiology
Cahoon, John Frederic,	Canton, N. Y.,	Economics
Caldwell, Andrew Arthur,	San José,	Law
Cameron, Catherine Minerva,	Hanford,	Drawing
Camp, Grace Cleone,	Palo Alto,	Entomology
A. B., Stanford, 1905.		
Campbell, Jesse Eugene,	Adin,	Law
Campbell, William Archy,	Kendallville, Ind.,	History
Campbell, William Howard,	Watsonville,	Physiology
Carley, Ralph Felix,	Quincy, Ill.,	Electrical Eng.
Carpenter, John Emil,	Mountain View,	Elec. Eng.
Carpenter, Nelson K.,	Escondido,	Civil Eng.
Carpenter, Susan Wilshire,	Los Angeles,	English

Carpenter, Walter Richard, Round Rock, Tex., Mech. Eng.
Carter, Charles Marshall, Pacific Grove, Civil Eng.
Carter, Estella Pearl, Palo Alto, Drawing
Carter, Lester Levi, Fresno, Civil Eng.
Carter, Ross Stagg, San Diego, Physiology
Carter, Royle Angelo, Fresno, Law *Sp.*
Carter, William Douglas, Quincy, Ill., Mechanical Eng.
Cartwright, Alexander Benj., Alhambra, Electrical Eng.
Cary, Luella, Palo Alto, English
Case, Paul Julian St. John, Emmetsburg, Iowa, Geol.-Min.
Ph. B., Iowa College. 1902.
Cassell, John Francis, San Francisco, Law
Catlin, Robert Allen, Visalia, English
Cavallaro, Dominick Clifton, San José, Law
Center, Inez, Lawrence, English
Chaffee, Burns Stoddard, Garden Grove, Physiology
Chalfant, Alice Jessie, Ukiah, German
Chalmers, Alexander Jessiman, Centerville, Ore., Physiology
Chandler, Clayton Isaac, Selma, Geology and Mining
Chandler, Howard Hiram, Selma, Geology and Mining
Chandler, Harley Pierce, San José, Education
B. S., Univ. of California, 1902.
Chandler, Robert Bowman, Los Gatos, Civil Eng.
Chandler, Winfred Buford, Baker City, Ore., Law
Chapman, John Frye, Redlands, English
Chapman, Ray J., Indianapolis, Ind., Elec. Eng.
Chappel, Halbert William, Stanford Univ., Physiology
A. B., Stanford, 1901, LL. B., 1903.
Charlebois, Emma Eulalie, Ventura, History
Charles, Shirley Mansfield, Palo Alto, Drawing
A. B., Stanford, 1903.
Chittenden, Albert Friederick, Walla Walla, Wash., Law
A. B., Whitman College, 1903.
Choate, James Roy, Los Angeles, Law
Choate, Joseph Lynn, Los Angeles, Physiology
Christensen, John Andrew, Newton, Utah, Education
Christy, Fred Chase, Phoenix, Ariz., Geol. and Min.
Clark, Claudia L., Redlands, History
Clark, Clarence Todd, Mountain View, History
B. S., Pacific Methodist College, 1897.
Clark, George Herbert, Stockton, Law
Clark, Howard Foster, Redlands, Civil Eng.

Clark, Lettie Macelia, San José, History
Clark, William Otterbein, Yale, Ill., Geology and Mining
A. B., Union Christian College, 1899.
Clark, Willis Arthur, Greeley, Colo., Elec. Eng.
Clarke, Harry Carver, Fall River, Mass., Physiol. *Sp.*
Clarke, James, Chicago, Ill., Mech. Eng.
Clarke, Oliver Holman, Fall River, Mass., Physiol. *Sp.*
Cleary, Mary Bissell, San Diego, Latin
Clift, Denison Halley, San Francisco, English
Cline, George Thomas, Los Angeles, Economics
Cline, Seymour Florian, Mansfield, Ohio, Geol.-Min.
Close, John Manley, San Francisco, Law *Sp.*
Cloud, Marshall Morgan, Santa Monica, Physiology
M. D., Kansas City Med. Coll., 1892; B. S., Univ. So. Calif., 1904.
Cloud, Roy Walter Noble E., Redwood City, History
Clover, Katharine, Alhambra, French
Cocks, Mary Downing, Palo Alto, Romanic Lang.
A. B., Stanford, 1905.
Coddington, Carrie Lucia, San Bernardino, German
Coe, Arthur Frederic, Los Angeles, Law
Coe, George Clifford, Portland, Ore., Physiology
Coen, Thomas More, Ottumwa, Iowa, Law
Colberg, Henry John, Stockton, Mech. Eng.
Colbert, John Hutsinpiller, Ft. Dodge, Iowa, Chemistry
Cole, Amos Newton, Du Bois, Pa., Mining Eng.
Cole, Ernest D., Santa Ana, Civil Eng.
Cole, John Lewis, Los Angeles, Geol. and Min.
Cole, William Russell, Des Moines, Iowa, Law
Coleman, George Albert, Palo Alto, Entomology
A. B., Stanford, 1903.
Collom, Roy Edward, Denver, Colo., Geol. and Min.
Colwell, Maynard R., Eureka, Electrical Eng.
Comings, Jennie Alice, San Francisco, Chemistry
Conant, Rexford Hitchings, Eureka, Electrical Eng.
Conde, Isabel, San Francisco, English
Conrow, Mary West, Oceano, German
Cook, Gordon Irving, Palo Alto, History
A. B., Carleton College (Mo.), 1902.
Cook, Newton Dana, Santa Barbara, Mech., Eng.
Coolidge, Ernest Lynn, Palo Alto, Civil Eng.
Coolidge, John Earl, Palo Alto, Drawing
A. B., Lafayette College, 1904.

Cooney, James Michael,	Elk,	Civil Eng.
Coons, James Watt,	Palo Alto,	Mech. Eng. *Sp.*
Cooper, Alice Cecilia,	Los Angeles,	English
Cooper, Anna Pearl,	Palo Alto,	English
A. B., Colorado College, 1896.		
Cooper, Barbara May,	Long Beach,	English
Cooper, Charles Newton,	Los Angeles,	Law
Coover, John Edgar,	Palo Alto,	Psychology
A. B., Stanford, 1904.		
Cope, Elmo Clifton,	San Francisco,	Geol. and Min.
Cornelius, Laura Miriam,	Riverside,	Law
Cornell, Olive,	Los Gatos,	Economics
Cortes, Charles Eliseo,	Guadalajara, Mex.,	Civil Eng.
Cory, Arthur Warren,	Santa Ana,	Civil Eng. *Sp.*
Cory, Edith Marie,	Fresno,	German
Cosgrove, Bard,	San Francisco,	Chemistry *Sp.*
Cottle, Everett Royal,	San José,	Elec. Eng.
Cotton, Claudine,	San Francisco,	History
Coughran, Charles Wiley,	Long Beach,	Physiology
Coulter, Edith Margaret,	Salinas,	German
A. B., Stanford, 1905.		
Coville, Alice Bertha,	Mountain View,	German
Cox, Albert Brooks,	Joplin, Mo.,	Elec. Eng.
Cox, Katherine,	Santa Clara,	History
Cozzens, William Lloyd,	San José,	Geology and Mining
Cragin, Albert Tillinghast,	Campbell,	Civil Eng.
Crandall, Berton Woodford,	Palo Alto,	Chemistry
Crandall, Esther,	Palo Alto,	Psychology
A. B., Stanford, 1903, A. M., 1905.		
Crandall, Helen LaBaree,	Oakland,	English
Crandall, Roderic,	Palo Alto,	Geol. and Mining
Crandell, Ethel Mae,	Redlands,	Latin
Crane, Arthur Garfield,	Fallbrook,	English
A. B., Stanford, 1905.		
Crane, William Frank,	Fallbrook,	Mech. Eng.
Cravens, Mary Ruhama,	Sacramento,	Zoology
A. B., Stanford, 1904.		
Crawford, Antoinette,	San Francisco,	English
Crawford, Perry Orson,	Los Angeles,	Elec. Eng.
Crawford, William Elmer,	Cupertino,	Chemistry
Crawford, William Oscar,	Santa Monica,	Elec. Eng.
Cree, Raymond,	Riverside,	Education *Sp.*

Crider, Clay Russell,	San José,	Economics
Crittenden, Franklin Avery,	Cupertino,	Law
Crook, James William,	San José,	Elec. Eng.
Crosiar, Annie Jane,	Pasadena,	English
Crosier, Mildred Irene,	Santa Ana,	English
Crossman, Walter Allen,	San José,	Chemistry
	A. B., Stanford, 1905.	
Crow, John Franklin Whitton,	Hollister,	Geol. and Mining
Crow, Mabel Gladys,	Alhambra,	German
Crowfoot, Ray Lee,	Paso Robles,	Civil Eng.
	A. B., Stanford, 1905.	
Crumby, Elizabeth Julia,	Redlands,	History
Crutcher, David Ernest,	Palo Alto,	Physiology
Crutcher, William Hamilton,	Palo Alto,	Law
Cruttenden, John William,	Quincy, Ill.,	Civil Eng.
Cruzan, Harold Ide,	San Francisco,	Law
Culver, Clifton Francis,	Los Angeles,	Law *Sp.*
Cummins, Russell Woodworth,	Covelo,	Civil Eng.
Cunha, Edward Anthony,	Milpitas,	Law
Cunningham, May Alice,	Sacramento,	French
Curran, Homer Fellows,	Springfield, Mo.,	Law
Curtin, Francis Andrew,	Elmira, N. Y.,	Law
Cushing, John Eldridge,	San Rafael,	Law
Cutler, Leland Whitman,	Palo Alto,	English
Cutter, Lawrence Edminster,	Mountain View,	Mech. Eng.
Cutting, James Arthur,	Palo Alto,	English
Daily, Harry Parker,	Ft. Smith, Ark.,	History
Danner, Eugene,	Moline, Ill.,	Geol. and Mining
Darby, Helen Louise,	Morgan Park, Ill.,	Physics
Davidson, Cassie Aleda,	Los Angeles,	English
Davidson, Carlon Carson,	Ellwood City, Pa.,	Economics
Davidson, John Pirnie,	Los Angeles,	Geology
Davis, Dwight M.,	Kansas City, Mo.,	Law
Davis, E. May,	Crockett,	French
Davis, Louise Van Dant,	Stanford Univ.,	English
Davis, Myrtle A.,	Los Angeles,	English
Davis, Paul McDonnell,	Pasadena,	Mech. Eng.
Davis, Warren A.,	Crockett,	Elec. Eng.
Dawson, Ralph,	Butte, Mont.,	Chemistry
Day, James Franklin,	Fillmore, Utah,	History *Sp.*
Dearing, Harry Lummis,	Santa Ana,	Law *Sp.*
Dehy, James Gordon,	Bishop,	Civil Eng.

Delano, Preston Brady,	San José,	Law
Dennis, Ivon Everett,	San José,	Law
Derby, Julia,	Los Angeles,	French
Derby, William Flagg,	Napa,	Zoology
Devendorf, Ada,	Los Angeles,	Botany
Dey, Benjamin Clifford,	Santa Cruz,	Law
Dibble, Arthur McQueen,	Portland, Ore.,	Law
Dickie, Fred Murdock,	San Mateo,	Mech. Eng., *Sp.*
Dickover, Erle Roy,	Santa Barbara,	English
Dickover, Eva Eleanor,	Santa Barbara,	Drawing
Dille, Ione Candace,	Cincinnati, Ohio,	Latin
Dillon, Isaac,	San Francisco,	Physiology
Dillon, James Root,	San Francisco,	Physiology
Dillon, Josephine,	Long Beach,	French
Doane, Edgar Willis,	Palo Alto,	Civil Eng.
B. S., Kansas State Agr. College, 1901.		
Doherty, Will Francis,	Riverside,	Elec. Eng.
Doig, Arthur Haldane,	San Diego,	Physiology
Dole, George Ethelbert,	Riverside,	Economics
Dole, Norman Eliot,	Riverside,	Chemistry
A. B., Stanford, 1904.		
Dole, Wilfred Heinrich,	Riverside,	Physiology
Donaldson, Joseph Everett,	Palo Alto,	Latin
Dooner, Clara,	Los Angeles,	English
Dorn, Grace Beatrice,	Corning,	English
Dorr, Frederick William,	San Francisco,	Law
Dorrance, Helen,	Carpinteria,	History
B. L., Mills College, 1904.		
Dotten, John Knowles,	Riverside,	Economics
Douglass, Charles York,	Palo Alto,	Chemistry
Downing, Samuel Robert,	Arcata,	Physiology
Doyle, Frances Michal,	Menlo Park,	Physiology *Sp.*
Dragon, Paul Louis,	Kans. City, Mo.,	Geol.-Min. *Sp.*
Drake, Wilbur Arthur,	Los Angeles,	Latin
Drinkwater, Mary Lucy,	Corona,	English
Dudgeon, William Thomas,	Kyle, Texas,	Law
Dudley, Ernest Griswold,	Stanford Univ.,	Syst. Botany
Dunbar, Everett St. John,	Palo Alto,	Civil Eng.
Duncan, Charles L.,	Porterville,	English
A. B., Stanford, 1904.		
Duncan, Louise,	Porterville,	English
Dunn, John Paul, Jr.,	Duarte,	Law *Sp.*

Dunn, May Alice,	Duarte,	History
Dunn, Nora Kathleen,	Stanford Univ.,	English
Dunne, James Leonard,	Palo Alto,	Civil Eng.
Duval, Ernest Hawley,	Saticoy,	History
Dwight, Francis Bartow,	Pasadena,	Mech. Eng.
Eastham, Wallis Fearnside,	Vancouver, Wash.,	Economics
Eaton, Clarence Burwell,	San José,	Mech. Eng.
Eckstein, Pearle Marie,	Norwalk,	English
Edson, Mark Samuel,	Palo Alto,	Civil Eng.
Edwards, Carolyn Z.,	San José,	English
Edwards, Gordon William,	San Francisco,	Elec. Eng.
Edwards, LeRoy Mallory,	Palo Alto,	Law
Edwards, Paul Carroll,	Indianapolis, Ind.,	English
Edwards, William Watkin,	San José,	Civil Eng.
Eichhorn, Alda Terese,	Miles City, Mont.,	Latin
Eisenman, William Hunt,	Palo Alto,	Law
Ph. B., Kenyon College, 1903.		
Elbert, Hoyt Hugh,	Des Moines, Ia.,	Zoology
Elliott, Charlotte,	Del Rapids, S. D.,	Zoology
Ellis, Annie Alexandra,	Pacific Grove,	Chemistry
Ellis, John Franklin,	Ogden, Utah,	Chemistry
Elwell, Cyril Frank,	Tatra, Hungary,	Elec. Eng.
Elwood, Roby Theresa,	Alhambra,	English
Engle, Alfred J.,	Palo Alto,	Law
Espinosa, y R., Joaquin,	Mexico City, Mex.,	Civil Eng.
Evans, Margaret Alice,	Anaconda, Mont.,	German
Evans, Mary Elizabeth,	Reno, Nev.,	History
A. B., Nevada State Univ., 1902.		
Everson, Fred Leroy,	Stockton,	Law
Ewing, William Ferdinand,	Stanford Univ.,	Mathematics
Fair, Paul J.,	Freeport, Ill.,	Zoology
Fairfield, Edith May,	Palo Alto,	English
Falk, Laura Bell,	Eureka,	German
Farnsworth, Louis Dugett,	Salt Lake City, Utah,	Elec. Eng.
Farrar, Monroe,	Mattoon, Ill.,	Mining Eng.
Farris, Faye Davena,	Palo Alto,	Latin
Favre, Eugene Barkley,	Palo Alto,	Law
Fay, William Stiles,	San Diego,	Civil Eng.
Featherstone, Gertrude Drusilla,	Palo Alto,	Latin
Fenton, Kenneth Lucas,	Portland, Ore.,	Law
Ferguson, Carl Augustus,	Colton,	Elec. Eng.
Fernald, George,	Chicago, Ill.,	Law

Ferry, Douglass Hewitt, Lakeside, Civil Eng.
Figg-Hoblyn, Thomas R. W. F., Santa Barbara, Civil Eng.
Finney, Clara Eugenia, Modesto, Mathematics
Firebaugh, Charles Ludwig, Palo Alto, Law
A. B., Stanford, 1904.
Fisher, Frank Alma, Salt Lake City, Utah, Law
Fisher, Walter Kenrick, Palo Alto, Zoology
A. B., Stanford, 1901, A. M., 1903.
Fisk, Stella Margaret, Eden Vale, History
Fitch, Harold, San Francisco, English
Fitting, Harold Hansen, San Bernardino, Civil Eng.
Fitting, Ralph Ulf, San Bernardino, Elec. Eng.
Fitzgerald, Fred Finley, Palo Alto, Chemistry
Fitzgerald, Ellen Winifred, Gilroy, Latin
Fitzgerald, Katherine Gertrude, Gilroy, Latin
Fitzsimmons, Victor Ross, Sebastopol, Chemistry
Flanders, Edward Aiken, Glencoe, Ill., Civil Eng.
Fleming, Louise Kate, San José, English
Fleming, Ralph Douglas, Palo Alto, Economics
Flentjen, Auguste E., Los Angeles, German
Fletcher, Arthur Ransford, Palo Alto, English
Flintjer, Ross, Kansas City, Mo., Elec. Eng.
Follmer, Ralph, Palo Alto, Mech. Eng. *Sp.*
Forbes, Ruth, Chicago, Ill., English
Forbes, Walter Dale, Ogden, Utah, Chemical Eng.
Ford, Robert MacFarlin, Los Gatos, Law
Forrest, Newell Stocher, Oakland, Mech. Eng.
Fosdick, Bertha May, Palo Alto, Mathematics *Sp.*
Fosdick, Richard Coffin, Fitchburg, Mass., Mech. Eng. *Sp.*
Foss, James Calvin, Jr., Palo Alto, Civil Eng.
Foss, Martha Archibald, Palo Alto, Mathematics
Foster, John Moody, Palo Alto, Chemistry *Sp.*
Foster, Mabel Gertrude, Palo Alto, Latin
Fountain, Robert, Banning, Law
Fowle, Carolyn Curtis, San Francisco, History
Fowler, Frederick Hall, Palo Alto, Civil Eng.
Fowler, Richard, San José, Elec. Eng.
Fowler, William Henry Begbie, San Francisco, Economics *Sp.*
Fox, Gladys Kathryn, San Francisco, History
Foy, Florence, Los Angeles, Economics
Frankish, Charles Goodwin, Ontario, Elec. Eng.
Franklin, George Glasier, Anaheim, Geol. and Mining

Fraser, Frederick John, Rye Beach, N. H., Law
Frederickson, Albion Fabian, Templeton, Elec. Eng.
Freeman, Anthony C., Chicago, Ill., Physiology
Freeman, Blanche K., Stanford University, English
A. B., Indiana University, 1896.
French, Davida Catherine, San Francisco, History
French, Henry Nelson, San José, Law
French, Rebecca Beatrice, San José, History
Friedman, Abe Herbert, San Francisco, Economics
Fries, Frank Hecht, San Francisco, Economics
Frink, Lester Daniel, Mountain View, Education
A. B., Stanford, 1904.
Frizzell, Porter Taylor, Mitchell, Ore., Chemistry
Fulkerson, Fannie Craig, Tazewell, Tenn., English
Fullaway, David Timmins, Palo Alto, Physiology *Sp.*
Fuller, Raymond August, Palo Alto, Geol. and Min.
Fulton, Charles Guthrie, Palo Alto, Elec. Eng.
Funke, Philip K., Denver, Colo., Law
Gabel, Alice Hernine, Palo Alto, German
Gaither, Robert Hughes, New York, N. Y., Mech. Eng. *Sp.*
Galbraith, William James, Jr., Los Angeles, Law
Gallois, John Eugene, San Francisco, Economics
Galloway, Frances Haney, Weiser, Idaho, Education
Gamble, George Edwin, Palo Alto, Chemistry
Gamble, James Lander, Palo Alto, Physiology
Gardner, Di Margaret, Orange, Law
Gardner, Dian Rathbun, Orange, Law
Gardner, Reginald Henri, Orange, Civil Eng.
Gardner, Vera Placida, Orange, Chemistry
Garfias, Valentine Richard, Mexico City, Mex., Civil Eng.
Garlinghouse, Lois Edna, Modesto, Latin
Garratt, Ronald Vivian, London, England, French
Gartzmann, Pauline, Long Beach, English
Gartzmann, Reeve, Long Beach, Law
Gavett, George Irving, Stanford Univ., Mathematics
B. S., University of Michigan, 1893.
Gay, Leslie Rowell, Redlands, Geol. and Mining
Gebb, William Stanley, Jerome, Ariz., Mech. Eng.
Geer, Charles Lester, Campbell, Law
Gemmill, Jesse, Clearwater, Geol. and Min. *Sp.*
George, Harry Wescott, Palo Alto, Psychology
Gerard, Bess, Long Beach, English

Gibbons, Oscar, Paso Robles, Law
Gibbs, George Snow, Salt Lake City, Utah, Psych.
A. B., Univ. of Utah, 1902; A. B., Stanford, 1904.
Gibbs, Harry Drake, Buffalo, N. Y., Chemistry
B. S., Cornell Univ., 1894.
Gibson, Cora Helen, Lakeport, English
A. B., Stanford, 1904.
Gibson, Edward Gilbert, Indianapolis, Ind., Civil Eng.
Gibson, Flora Edna, Templeton, Latin
Gibson, Irving Deane, San Francisco, Economics
Gibson, James A., Los Angeles, Law
Giebel, Carl Davis, Sandusky, Ohio, Chemistry
Gilbert, Florence, San Bernardino, English
Gilbert, Grace McMillan, Santa Barbara, History
Gilbert, Ruth Hughes, Stanford University, English
Gilbert, Winifred Hughes, Stanford University, History
Gilman, Harold Arthur, Redlands, Law
Gilmore, Sadie Lois, San José, Mathematics
Gittings, Charles, Berkeley, Mech. Eng.
Gleim, Edgar Miller, Portland, Ore., Geol. & Mining
Godfrey, Olive Corintha, Vacaville, German
Gonsalves, Louis, Mendocino, Law
Goodall, Charles F., San Francisco, Geology
Goodell, James McLain, Palo Alto, Mech. Eng. *Sp.*
Goodspeed, Lillian Mildred, Palo Alto, Latin
Gordon, Alfred W., Pasadena, Mech. Eng.
Gordon, John Turbenville, Jr., Azusa, Law
Goshorn, Joseph Ford, Kalispel, Montana, Physics
Gossett, Evangeline Singleton, Palo Alto, English
Goudy, Franklin Burris, Denver, Colo., Geol & Min.
Grace, Florence Mary, Rivera, Mathematics
Graham, Mary Thornly, San José, Greek
Graham, Nina Jean, Eureka, English
A. B., Stanford, 1905.
Grass, Robert, Council Bluffs, Iowa, Law
Grau, Miriam Stedman, San Francisco, Physiology
Grau, Otto Karl, Sacramento, History
Graves, Ethel Winona, Los Angeles, Chemistry
A. B., Stanford, 1903.
Gray, Mabel Sabrina, Albany, N. Y., German
Green, Edward Anthony, Mountain View, Physiology
Green, Eldridge, San Mateo, Elec. Eng.

Green, Helen,	Stanford Univ.,	English
Green, Isaac Leander,	Preston,	Law
Green, Lucius Payton,	Mountain View,	Law
Greenlaw, Charles Rutherford,	Boston, Mass.,	Mech. Eng.
Greer, Dane M.,	Stanford Univ.,	Chemistry
Gregg, Mary Elizabeth,	Chico,	English
Gregg, Ruth Bailey,	Palo Alto,	Mathematics
Griffin, Allan Tristram,	San Francisco,	Geol. and Min.
Grigsby, Harry C.,	Tulare,	Geology
Grinnell, Fordyce, Jr.,	Pasadena,	Entomology
Griswold, Percy McChesney,	San Francisco,	Elec. Eng.
Gude, Julie Augusta,	Los Angeles,	English
Gulick, Ray Alexander,	Watsonville,	Elec. Eng.
Gunst, Morgan Arthur,	Burlingame,	Law
Guthrie, William Smith,	Palo Alto,	Elec. Eng.
Guyer, Cloyd George,	Altadena,	Geol. and Mining
Haas, Caroline,	San José,	English
de Haas, Jacob Anton,	The Hague, Holland,	Econom.
Hadley, Clyde Musgrave,	Bellingham, Wash.,	Law
Hadley, Earl Jonathan,	Bellingham, Wash.,	English
Hainer, Julia,	Aurora, Nebr.,	German
Hainer, Laura,	Aurora, Nebr.,	German
Hall, Anna Gertrude,	Santa Clara,	English
Hall, Ethel Blanche,	Sacramento,	French
Hall, Etta Benedict,	San José,	English
Hall, Hayes,	San José,	English
Hall, Homer Solman,	Danville, Ind.,	Civil Eng.
Halloran, Lewis Fred,	San Francisco,	Mech. Eng.
Halsey, Edna Gerardine,	Santa Cruz,	Latin
Halsey, Gerald C.,	Redwood City,	Law
Halsey, Mildred,	Redwood City,	German
Halsey, Milo Clinton,	Los Angeles,	Civil Eng. *Sp.*
Hammond, Peter Homer,	Palo Alto,	Latin
Hampson, Joseph Hale,	Palo Alto,	Chemistry
Hampton, Alfred Lee,	Grand Junc., Colo.,	Elec. Eng.
Hampton, Chilton,	Palo Alto,	Civil Eng.
Hampton, George Washington,	Grand Junction, Colo.,	Law
Handshy, Arden Barnes, A. B., Albion College, 1901.	Onaway, Mich.,	Education
Hanna, Junius Robert,	Bradford, Pa.,	Civil Eng.
Hansen, Edna Marie,	San Mateo,	Latin
Hanson, J. Wesley,	San José,	Chemistry

Hanson, James William, Jr.,	Alameda,	Elec. Eng.
Harbaugh, Ross Wallace,	Palo Alto,	Chemistry
Harman, William Carpenter,	Rosedale,	Elec. Eng.
Harnan, William Lewis,	Butte, Mont.,	Chemistry
Harrington, John Peabody,	Santa Barbara,	German
A. B., Stanford, 1905.		
Harrington, Kate Theresa,	San Bernardino,	English
Harris, Harry Benjamin,	Carrollton, Ky.,	Civil Eng.
Harris, Raymond Sallee,	Sacramento,	English
Hart, James Vivian,	Sacramento,	Law
Haselwood, Fred Willis,	Palo Alto,	Civil Eng.
B. S., Kansas State Agr. College, 1901.		
Haskell, Edward Eben,	Pasadena,	Civil Eng.
Hastings, Russell Platt,	Soncy, Bermuda Is.,	Mech. Eng.
Hatch, Everett Hamilton,	Napa,	Civil Eng.
Hathaway, Frank Bacon,	Oklahoma, Okla.,	Elec. Eng.
Hauverman, Laura Margaret,	Banning,	English
Havenner, Franck Roberts,	Washington, D. C.,	Math.
Haver, Harold McCuller,	Redlands,	Elec. Eng.
Haver, Samuel Caldwell, Jr.,	Redlands,	Elec. Eng.
Hawkins, Horatio Bates,	San Francisco,	History
Haws, Murray Willman,	San Bernardino,	Mech. Eng.
Hayes, Alice Sedonie,	Denver, Colo.,	German
Hayes, Edward A.,	El Monte,	Civil Eng. *Sp.*
Haynes, Diantha May,	Pasadena,	Physiology
A. B., Throop Polytechnic, 1896.		
Haynes, Walter,	Portland, Ore.,	Elec. Eng. *Sp.*
Hayslip, Eva Lois,	Sunnyvale,	English
Hayward, Emma,	San Carlos,	Economics
Hayward, Jeannette May,	Santa Barbara,	Drawing
Hazard, Earl Chester,	Whittier,	History
Hazlett, Mabel Adelaide,	Palo Alto,	History
Hedemann, Carl Kalani,	Honolulu, H. I.,	Mech. Eng. *Sp.*
Hedum, Marie Otillie,	Miles City, Montana,	Latin
Heffron, Harold J.,	Los Angeles,	Civil Eng.
Heinly, Webster Guy,	Creston, Iowa,	Law
B. S., Knox College, 1901.		
Hellwig, Herbert Frederick,	San Francisco,	Geol. and Min.
Henderson, Charles William,	Portland, Ore.,	Geol. and Min.
Henderson, Harry Finley,	Santa Ana,	History
Henking, Stella Viola,	San Diego,	French
Henley, Edward Vernon,	Stanford University,	Law

Henley, Lloyd A.,	Ukiah,	Elec. Eng.
Henley, William Wheeler,	Mayfield,	Mech. Eng.
Henry, Gertrude May,	Los Angeles,	English
Henzel, Bertha,	San Francisco,	German
Herbert, Elmer Harlan,	San José,	Mech. Eng.
Herre, Albert Christian,	San José,	Botany
A. B., Stanford, 1904.		
Herrmann, Frank Adolph,	San José,	Civil Eng. *Sp.*
Herron, Frederic William,	Napa,	Civil Eng.
Herron, George Merrick,	Napa,	Civil Eng.
Herron, Josephine E.,	Elsinore,	Drawing
Herron, William Fraser,	Telluride, Colo.,	History *Sp.*
Hess, Irving Cheney,	Berkeley,	Civil Eng.
Hetherington, Hazel Camilla,	Stanford Univ.,	Chemistry
Hettman, Frederick Jacob,	Rocklyn, Wash.,	Elec. Eng.
Heunisch, Albert Gustave,	San Francisco,	Economics
Heuston, Benjamin Burgers,	St. Paul, Minn.,	English
Heyneman, Walter Robertson,	San Francisco,	German
Hickin, Vance,	Rittman, Ohio,	Geol. and Min.
Higley, Rose Miriam,	Pasadena,	Zoology
Higley, Wynter Blain,	Pasadena,	Min. Eng. *Sp.*
Hill, Ella Naomi,	Redlands,	History
Hill, Frank Lloyd,	Palo Alto,	Law
Hill, John James,	Riverside,	English
Hill, Margaret Frances,	Mountain View,	Mathematics
B. L., University of California, 1901.		
Hill, Roland Varian,	Pasadena,	Civil Eng.
Hilles, Anna Edith Updegraff,	Palo Alto,	Education
A. B., Ohio Wesleyan Univ., 1875.		
Hoag, Bessie Bell,	Palo Alto,	Latin
Hoag, Nellie Graham,	Palo Alto,	Latin
Hoagland, Dennis Robert,	Denver, Colo.,	Chemistry
Hockett, Neena Helen,	Whittier,	Latin
Hodgdon, Emma Florette,	Sacramento,	French
Hodge, George Ashmun,	San Diego,	Elec. Eng.
Hodge, Raymond Earl,	Rialto,	Law
Hoenig, Louis J.,	Lockport, N. Y.,	Economics
LL. B., Cornell University, 1904.		
Holcomb, Fred Leroy,	Banning,	Civil Eng.
Holcomb, Harry Gordon,	Banning,	Civil Eng.
Holloway, Edith Hilda,	Helena, Montana,	History
Holly, Jesse Blaine,	Dixon,	Civil Eng.

Holly, Theodora H., Palo Alto, German
A. B., Stanford, 1904.
Holman, Fred Sanderson, Willits, English
Holman, Mary Persis, Palo Alto, Education
Holman, Richard Morris, Palo Alto, Botany
Holmes, Marion Estelle, Palo Alto, Physiology
A. B., Stanford, 1896.
Holmquist, Hjalmar Edwin, Redwood City, Law
A. B., Stanford, 1904.
Holt, Grace, San José, English
Hood, Florence Mifflin, Baltimore, Md., History
Hook, Chestina Alma, Perris, Rom. Lang.
Hooker, William Josiah, Buffalo, N. Y., Civil Eng.
Hooper, Arthur Willard, San Francisco, Economics
Hoops, Ethel Belle, Chicago, Ill., French
Hoover, Grace Amelia, Palo Alto, Drawing
Hopkins, Ralph Allen, Pasadena, Elec. Eng.
Hopper, Leona May, Palo Alto, English
A. B., Stanford, 1903.
Hopper, Shirley Marie, Palo Alto, German
Hori, Ayao, Vallejo, Elec. Eng.
Horn, Pearl Myrtle, Bakersfield, Mathematics
Hornby, Raymond, Redlands, Chemistry
Horowitz, Elmor Eugene, San Bernardino, Chemistry
Horton, Harry Leonard, Ukiah, Civil Eng.
Hosford, Ada, Menomonie, Wis., Latin
Hoskins, Grace Granville, Palo Alto, French
Hoskins, Lindel Margaret, Palo Alto, German
Houchins, Edward Leicester, Colusa, Civil Eng.
Howard, Ross D., San Francisco, Mech. Eng.
B. S., Colorado State Agr. College, 1901.
Howe, George Washington, Crescent City, Law *Sp.*
Hoxsie, George Gordon, Portland, Ore., Chemistry
Hoyle, William Howard, Providence, R. I., Geol.-Min.
Huchting, William Ernest, Brooklyn, N. Y., Chemistry
A. B., Cornell Univ., 1904.
Hudson, Robert Allan, San José, Mech. Eng.
Hudson, Robert Henry, Watsonville, Law
Hughes, Arthur Dickinson, Downer's Grove, Ill., Geol.-Min.
Hughes, Kenneth Leach, Madera, Geol. and Min. *Sp.*
Hughson, Beth, Sacramento, Greek
Huiskamp, Hazel, Montecito, German

Hull, Anna May,	Palo Alto,	Chemistry
Hull, Delia Mae,	Palo Alto,	Latin
Humphrey, Harry Baker,	Palo Alto,	Botany
B. S., University of Minnesota, 1899.		
Humphrey, Olive Agatha M.,	Palo Alto,	Botany
B. S., University of Minnesota, 1899.		
Hunter, Hubert Samuel,	Phoenix, Arizona,	Latin
Hunter, Katherine Isabel,	Fullerton,	Greek
Hunter, Thomas Benton, Jr.,	San Francisco,	Civil Eng.
A. B., Stanford, 1905.		
Huntsberger, Glen E.,	Los Angeles,	Latin
Hurd, Katherine,	Palo Alto,	German
Hurlbut, Harold Hunter,	Lewiston, Idaho,	Rom. Lang.
Hurlbut, Verne Cecil,	Lewiston, Idaho,	Geol.-Min.
Hutchins, Alice Agnes,	Palo Alto,	French
Hutchins, Mary Emeline,	Palo Alto,	French
Hutchinson, Harry Turner,	Huron, S. D.,	Geol. and Min.
Hyatt, Marguerite,	Riverside,	English
Hyatt, Shirley,	Riverside,	Physics
Hyde, Clarence Elmer,	Cupertino,	Physiology
Hyde, Lillian Seraphine,	Palo Alto,	History
A. B., Stanford, 1903.		
Hyde, Otis Edwin,	Cupertino,	Drawing
Hyde-Smith, J. Bayard,	San Francisco,	Economics
Ichihashi, Yaniato,	San Francisco,	Economics
Inahara, Katsuji,	Tokyo, Japan,	Economics
Ingalls, Clayton E.,	San José,	Elec. Eng.
Innis, Ethelwyn,	St. Paul, Minn.,	English
A. B., Hamline University, 1903.		
Iriya, Matthew Etsutaro,	Stanford Univ.,	Economics
Irwin, Arthur May,	Palo Alto,	Economics
Irwin, Isabel Rankin,	Monmouth, Ill.,	English
A. B., Monmouth College, 1903.		
Jackson, Edward Royle,	Redding,	Law
Jacob, George, Jr.,	Palo Alto,	Elec. Eng.
James, Carlton Cheney,	Los Angeles,	Chemistry
A. B., Stanford, 1905.		
James, Edwin Worley,	Ossining, N. Y.,	Civil Eng.
A. B., Harvard Univ., 1900.		
James, Grace Louise,	Santa Monica,	History
Jameson, Joy Gilbert,	Corona,	Mining Eng.
Jarman, Edith Louise,	San José,	History
Jeffers, Delphus Leaton,	Palo Alto,	Education

Jeffers, Wellington John,	Lindsay, Ont.,	Physiology *Sp.*
Jenkins, Alice Mabel,	Stanford Univ.,	Physiology
Jenkins, Hubert Oliver,	Stanford Univ.,	Zoology
Jewell, Thomas,	Devils Lake, N. D.,	Elec. Eng.
	A. B., Univ. of North Dakota, 1902.	
Jewett, Stanley Guion,	Marysville,	English
Johnson, Albert O.,	Portland, Ore.,	Civil Eng. *Sp.*
Johnson, Clark Cyrus,	Los Angeles,	Civil Eng.
Johnson, Harry Theodore,	Palo Alto,	Law
	A. B., Univ. of Nebraska, 1901.	
Johnson, Jennet,	Redlands,	English
Johnson, Ronald De Vore,	Portland, Ore.,	Law
Johnson, William Samuel,	Stanford Univ.,	Elec. Eng. *Sp.*
Johnston, Ila Lee,	Santa Clara,	English
Johnston, John Leslie,	Redwood City,	Law
	A. B., Stanford, 1904.	
Jollyman, Alice,	Cupertino,	Spanish
Jones, Augustine,	San José,	Philosophy
Jones, Bertha Emma,	Los Alamitos,	English
Jones, Charles Arch,	Stockton,	Civil Eng.
Jones, Guy Pierpont,	Palo Alto,	English
Jones, Robert Alton,	Burlington, Vt.,	Chemistry
Jordan, Harold Bowen,	Stanford Univ.,	Chemistry
Jorgensen, Henry Garfield,	Los Gatos,	Law
Josephson, Julien,	San Francisco,	Economics
Jourdin, Willis Wallace,	San Antonio, Tex.,	Mech. Eng. *Sp.*
Kasuya, Gisaburo,	San Francisco,	Education *Sp.*
Katakura, Tojiro,	Stanford Univ.,	Economics *Sp.*
Kawai, Taiyi,	San Francisco,	Economics
Kawara, Masaki,	San Francisco,	Elec. Eng.
Kay, David Nelson,	Sacramento,	Geol. and Mining
Kearne, Arthur Lindsay,	Santa Barbara,	Economics
Keesling, Homer Grant,	Eden Vale,	Elec. Eng.
Keiser, Emelie Caroline,	San José,	Physiology
	A. B., Stanford, 1904.	
Kelley, Charlotte Jane,	Redlands,	History
Kelley, Leigh,	Ft. Smith, Ark.,	Civil Eng.
Kellogg, Roy Seldon,	Pasadena,	Chemistry
Kelly, Henry Clay,	San José,	Law
Kelly, Virginia Mabel,	Palo Alto,	Physiology
	A. B., Stanford, 1903.	
Kelly, Walter Poundstone,	Los Angeles,	English

Kemp, William Webb,	Palo Alto,	Education
A. B., Stanford, 1898.		
Kennedy, James Derwent,	Honolulu, H. I.,	Economics
Keym, Nellie Catherine,	Fairfield,	English
Kimball, Letizia Moulton,	Eureka,	History
Kimble, Ruby,	Los Angeles,	History
Kimura, Tokuzo,	Sendai, Japan,	Zoology
King, Frances Shulze,	Banning,	English
King, Helen Garfield,	Ocean Park,	French
King, Marguerite Stuart,	Banning,	English
King, Preston Wallace,	San Luis Obispo,	Mech. Eng.
Kip, Kathryn Romer,	Palo Alto,	English
A. B., Stanford, 1904.		
Kirkpatrick, Grace Fleming,	Palo Alto,	French
Kite, Edwin Leon,	Redding,	Elec. Eng.
Klaine, Marie Ludavine,	Santa Clara,	German
A. B., Stanford, 1905.		
Klauber, Lawrence Monroe,	San Diego,	Elec. Eng.
Klein, George,	Mountain View,	Mech. Eng.
Klette, Ernest Carl Gustave,	Fresno,	Law *Sp.*
Knapp, Gertrude,	Palo Alto,	Zoology
Knight, Robert Bruce,	Palo Alto,	Law
A. B., Stanford, 1904.		
Knipe, Olive,	Palo Alto,	English
Knowles, Paul Valerian,	San Francisco,	Latin
Knupp, Guy,	Porterville,	Law
Kobayashi, Teiji,	San Francisco,	History *Sp.*
Kocher, Rudolph Alfred,	San José,	Economics
Koerner, William,	Oregon City, Ore.,	Geol.-Min.
Koontz, John Andrew, Jr.,	Palo Alto,	Elec. Eng.
Kuhnert, Walter Andrew,	San Francisco,	Geol. and Min.
Lacey, Arthur Carlos,	Buffalo, N. Y.,	Geol. and Min.
Lacey, Rowland Sherman,	San Diego,	History
Lachmund, Ralph Henry,	Clinton, Iowa,	Law
La Dow, Ruth,	Sandusky, Ohio,	German
Lakin, Egerton Drew,	Palo Alto,	History
Lamb, Earl,	San José,	Law
Lambert, Elamae,	Woodland,	English
Lamborn, Bertha Taylor,	Palo Alto,	Latin
Lanagan, Frederic Rodgers,	Stanford Univ.,	Law
Lanagan, William Henry,	Denver, Colo.,	Geol. and Min.
Lane, Ernest Allen,	Chula Vista,	Law

Lane, Fulton,	Stanford Univ.,	Geol. and Min.
Langille, Herbert Bamford,	San Francisco,	Civil Eng.
Langstroth, Francis Blackburn,	Oakland,	Geol. and Min. *Sp.*
Langstroth, Lovell,	Oakland,	Chemistry
Lantz, Carl Augustus,	Colton,	Chemistry
Lantz, Fred Otto,	Colton,	Elec. Eng.
Larnach, Alexander Deuchar,	Honolulu, H. I.,	Law *Sp.*
Laumeister, Clarence F.,	San Francisco,	Law
Lawrence, Hadley Webster,	San José,	Law *Sp.*
Lawry, Anna,	Redding,	Zoology
Leach, Charles Nelson,	Los Angeles,	Chemistry
Lee, Mary Thompson,	Mountain View,	History
Lemmon, Dal Millington,	Santa Rosa,	Law
Lessey, Beatrice,	San Francisco,	French
Lett, Andrew Hilliard,	Riverside,	Geology
Levy, Edmond L.,	San Mateo,	Geol. and Mining
Levy, Leo Samuel,	Virginia City, Nev.,	English
Levy, Leon Gambetta,	San Francisco,	German
Lewis, Alvin Francis,	Palo Alto,	Chemistry
Lewis, Azro Nathaniel, Jr.,	Alameda,	Law
Lewis, Charles Granville,	Pacific Grove,	Geol. and Min.
Lewis, Charles Lux,	Alameda,	Law
Lewis, DeLancey,	San José,	Law
Lewis, Howard Milton,	Palo Alto,	Law
A. B., Stanford, 1904.		
Lewis, Robert Strong,	Palo Alto,	Geol. and Mining
Lidders, Alexander Henry,	Palo Alto,	Elec. Eng. *Sp.*
Liebes, Leon Isaac,	San Francisco,	Economics
Lilienthal, Jesse Warren,	San Francisco,	Economics
Lipscombe, Maud May,	Saratoga,	Latin
Livingston, Douglas Clermont,	Duncan, B. C.,	Chemistry
Lloyd, Edwin Arthur Rowland,	Mason City, Ia.,	Economics
Lloyd, Ethel Grace,	Mason City, Ia.,	Rom. Lang.
Lloyd, Lillie E. V.,	Redlands,	Latin
A. B., University of Toronto, 1904.		
Loeser, Katherine Foster,	Stanford Univ.,	Chemistry *Sp.*
Loeser, Robert M.,	Stanford Univ.,	Chemistry *Sp.*
Long, Burton Earle,	Covina,	Chemistry
Lord, Charlotte Mable,	Palo Alto,	History
A. B., Stanford, 1902.		
Lord, Wilma Grace,	Palo Alto,	Zoology
Lousley, Oswald Swinney,	Santa Barbara,	Physiology

Luce, Edgar Augustine, San Diego, Law
Luhrs, Arthur C., Phoenix, Ariz., Elec. Eng.
Luke, Amy Genevieve, Berkeley, English
Lukins, Elmer Harrington, Virden, Ill., Economics
Lummis, Laura Ladd, Appleton, Wis., Latin
A. B., Lawrence University, 1903.
de Luna, Mercedes Maria, Los Angeles, French *Sp.*
Lutz, Ralph Haswell, Port Angeles, Wash., Law
Lyman, Chester Laidlaw, San Francisco, Law
Lyman, George Dunlap, Reno, Nev., Physiology
Lyman, Georgina, Ft. Smith, Ark., English
Lyman, Margaret Elizabeth, Yuba City, English
Lynch, Henry Baker, Alameda, Geol. and Min. *Sp.*
Lyons, Willard Everett, Des Moines, Iowa, Law
McCargar, Maude Gurnsey, Salt Lake City, Utah, Botany
McCaslin, Harvey, Palo Alto, Law
A. B., Stanford, 1904.
McCaughern, John Casey, Stanford Univ., Economics
A. B., Stanford, 1905.
McChesney, Horace B., Palo Alto, Civil Eng.
McColloch, Claude C., Portland, Ore., Law
McComish, Ralph Clinton, Stanford Univ., Law
A. B., Stanford, 1903.
McCord, Glendora Elpha, Des Moines, Iowa, German
Mac Cormac, Margaret E., Palo Alto, Greek
McCracken, Mary Isabel, Oakland, Entomology
A. B., Stanford, 1904.
McCray, Leora Frances, Wilkinston, Ind., History
A. B., Indiana University, 1899.
McDanell, Louise, Los Angeles, Chemistry
McDaniel, George William, Ogden, Utah, Mining Eng.
Macdonald, William Griffith, Troy, N. Y., Economics
McDougal, John Hynes, Belmont, Elec. Eng.
McDowell, Blanche Blair, Clay Center, Nebr., English
McDowell, Frances Evelyn, Los Angeles, German
A. B., Stanford, 1904, A. M., 1905.
McElroy, Robert Wheeler, San Francisco, Law
McFadden, Ralph John, Placentia, Geology
McFarland, John Cobb, Los Angeles, Law
MacFarland, Olive H., Palo Alto, Physiology
B. L., Ohio Wesleyan University, 1893.
McGeorge, Edith, Eureka, German
MacGibbon, Eugene Howard, San Bernardino, English

McGilvray, Jessie D., Stanford Univ., History *Sp.*
McGovern, Edward Joseph, Palo Alto, Law *Sp.*
McGregor, Ernest Alexander, Palo Alto, Zoology
McIntosh, George Wade, Mentone, Civil Eng. *Sp.*
McIntyre, Ethel Caroline, Menlo Park, German
McIntyre, Grace Mary, Menlo Park, History
MacIntyre, John Malcolm, Phoenix, Ariz., Geol. and Min.
A. B., Queen's College, 1892.
McIntyre, Katherine, Elsinore, English
McKay, Cecil Curtis, Geneva, N. Y., Mech. Eng.
Mackay, Minnie Laurie, Santa Clara, Botany
A. B., Stanford, 1905.
McKee, Bessie Willoughby, Palo Alto, German
McKey, Camilla Worm, La Jolla, Latin
McKibben, Mabel, Stanford Univ., Latin
McKibben, Maud, Stanford Univ., History
McLain, George Baundige, Los Angeles, Geol and Min.
McLean, Herbert Harris, Colton, Civil Eng.
McMurphy, James Ira Wilson, Loleta, Zoology *Sp.*
McNaught, Hector Cowan, Denver, Colo., Geology
McNee, Royal John Hunter, San Francisco, Economics
McNeil, Warren T., Tracy, Physiology
McQuaid, Cole Clark, Yuba City, Economics
MacSwain, Alexander Reginald, Santa Clara, Economics
MacSwain, Elizabeth Annie, Santa Clara, German
McWethy, LeRoy, Rialto, Civil Eng.
McWethy, William Ernest, Rialto, Elec. Eng.
A. B., Stanford, 1905.
Mahone, Francis Douglas, Honolulu, H. I., Elec. Eng.
Malcom, Roy, Compton, History
Malloy, Joseph Drumm, San José, Education
Maloy, Jeff. L., San José, Law
Maloy, John W., San José, History
Mansfield, George Curtis, Los Angeles, Economics
Manwaring, Clarence Tryon, Meriden, Conn., Law
Marceau, Daniel Victor, Lockeford, Law
Marks, J. Glenn, Los Angeles, English
Marshall, Ralph Kerr, Phoenix, Ariz., Law
Martin, Adelin, Stanford Univ., Romanic Lang.
Martin, Ernest Whitney, Palo Alto, Latin
A. B., Univ. of Chicago, 1900; A. M., Stanford, 1902.
Martin, Harry Wilson, Banning, Elec. Eng.

Mathews, Bryant,	Los Angeles,	Economics
Mathewson, Arthur Adelbert,	Coronado,	Geol. and Mining
Mattes, Lewis Yarde,	Corning,	Mech. Eng. *Sp.*
de Mattos, Augustine Edward,	Watsonville,	Law
Matzke, Edith Virginia,	Palo Alto,	Drawing

A. B., Dickinson Seminary; M. D., Woman's Med. College, 1895.

May, Ernest Raymond,	Los Angeles,	Law
Mayreis, Louis John,	Stanford Univ.,	Mining Eng.
Meiklejohn, Edward Clark,	Butte, Montana,	Chemistry
Melczer, Isadore,	Phoenix, Ariz.,	Law
Menardi, Harold Blair,	Los Angeles,	Chemistry
Menker, Raymond Chester,	San José,	Economics
Merrill, Arthur Tenny,	Red Bluff,	English

A. B., Stanford, 1905.

Merrill, Charles Holbrook,	San Francisco,	Economics
Merrill, John Albert,	San Francisco,	Law
Merrill, Paul Willard,	Saratoga,	Mathematics
Merriman, Laura Elizabeth,	Palo Alto,	English
Mesa, Joseph R.,	Mayfield,	Law *Sp.*
Meyer, Alice Marie,	Menlo Park,	English
Meyers, Alfred E.,	Palo Alto,	Physiology
Miano, John Norton,	San José,	Elec. Eng.
Michael, Ellis Le Roy,	La Porte, Ind.,	Zoology

A. B., University of Michigan, 1904.

Millar, Lois,	San Rafael,	Law
Millar, Paul E.,	San Rafael,	Latin
Miller, Ada Jane,	Cedar Rapids, Iowa,	English

Ph. B., Cornell (Ia.) College; Ph. B., University of Chicago, 1904.

Miller, Alvera Elizabeth,	Skyland,	English
Miller, Arlin D.,	Portland, Ore.,	Elec. Eng.
Miller, Clark Flickner,	Los Angeles,	Civil Eng. *Sp.*
Miller, Charles Kendrick,	Palo Alto,	Civil Eng. *Sp.*
Miller, Dewey Harold,	Oakland,	Chemistry
Miller, Earl Everett,	Vinton, Iowa,	Law
Miller, Edith Frank,	Sacramento,	French
Miller, Eugenia Romain,	Fresno,	English
Miller, George Edmonds,	Palo Alto,	Mech. Eng. *Sp.*
Miller, Iva Myrtle,	Santa Ana,	German
Miller, John Martin,	Reedly,	Zoology
Miller, John Owen,	Palo Alto,	Zoology
Mills, Anna Rae,	San José,	German
Mills, Ross Myers,	Merced,	Law

Mills, Sarah Matilda,	National City,	English
Mini, Joseph, Jr.,	Los Gatos,	Elec. Eng.
Minter, Lula Marie,	Santa Ana,	Latin
Mirrielees, Edith R.,	Bigtimber, Mont.,	English
Mitchell, John Shepard,	Ontario,	History
Mitcheltree, Lota Mary,	Palo Alto,	English
Mitoma, Taizo,	Oakland,	Elec. Eng. *Sp.*
Mobley, Blanche Julia,	Fowler,	English
Moise, Clarice Sara,	San Francisco,	French
Moise, Hazel Irene,	San Francisco,	French
Molfino, Albert Andrew,	Jackson,	Law
Monahan, John,	Savannah, Ga.,	Civil Eng.
A. B., University of Georgia, 1903.		
Monroe, Grace Elizabeth,	Eureka,	Latin
Montague, Lilian Anna,	Los Angeles,	French
Monteith, Evelyn Lucile,	Paso Robles,	English
Monteith, Minerva,	Paso Robles,	Physics
Montgomery, Beatrice,	Red Oak, Iowa,	English
A. B., Smith College, 1902; A. M., Stanford, 1905.		
Montgomery, Henry Schuyler,	Saginaw, Mich.,	Chem. Eng.
Monzingo, John Johnson,	Palo Alto,	Civil Eng.
Moody, Adelbert Montague,	The Dalles, Ore.,	Physiology
Moore, Edith Harriet,	Altadena,	German
Moore, Emmet B.,	Salt Lake City, Utah,	Elec. Eng.
Moore, Grant Hathaway,	Los Gatos,	Civil Eng.
Moore, Mary Adaline,	Pasadena,	German
Moore, Raymond Howard,	Boise, Idaho,	Economics
Moran, Hugh Anderson,	Palo Alto,	Greek
Moran, Robert Breck,	Palo Alto,	Geology
Morehouse, Willis Edwin,	Cleveland, Ohio,	Economics
Morell, George Fowler,	South Amherst, Mass.,	Civil Eng.
Morgan, Jeannette C.,	San Diego,	French
Mori, Jame,	Pacific Grove,	History
A. B., Stanford, 1904.		
Morin, William James,	Stanford Univ.,	Rom. Lang.
Morris, Charles Shoemaker,	Pasadena,	English
Morris, Clare Elizabeth,	Lewiston, Idaho,	English
Morris, Earl Leonard,	Santa Ana,	Zoology
A. B., Stanford, 1904.		
Morris, Myrl,	San Francisco,	English
Morris, Robert Farley,	Salem, Ore.,	Elec. Eng.
Morris, Ruth Eyer,	Los Angeles,	English

Morse, Charles Benjamin, Santa Clara, Mathematics
Morton, Stuart Curtis, San Francisco, Chem. Eng.
Moser, Charles, Mt. Healthy, Ohio, Civil Eng.
Moser, Stuart, Mt. Healthy, Ohio, Civil Eng.
Mott, Albert Gifford, Lawrence, Elec. Eng.
Motz, Ralph Leslie, Butte, Mont., Mech. Eng.
Moule, Irene Helen, San José, English
A. B., Stanford, 1905.
Moulton, Lina, Palo Alto, German
Moulton, Mary Esther, Palo Alto, Botany
A. B., Stanford, 1905.
Moulton, Stillman Moses, Palo Alto, Entomology *Sp.*
Mugler, Frederick Rolla, Merced, Physiology
Muller, Nellie Caroline, Grand Rapids, Wis., Math.
Mullin, Georgia, Cedar Rapids, Iowa, German
Mulvihill, Mary Frances, Redlands, Latin
Munger, Arthur Lee, Jr., Palo Alto, Chemistry
Murdock, Effie Lisle, Salt Lake City, Utah, Latin
Murgoci, George Munteami, Bucharest, Roumania, Geology
Ph. D., University of Vienna, 1900.
Murphy, Arthur Alban, Portland, Ore., Law
Murphy, Winnifred Catherine, Tacoma, Wash., Botany
Myer, Blanche, Palo Alto, English
Myers, James Walter, Portland, Ore., Education
Myers, Robert Folsom, Bakersfield, Elec. Eng.
Naftzger, Roy Edgar, Los Angeles, Economics
Nagel, Laura Ingeborg, Davenport, Iowa, German
A. B., Stanford, 1904.
Nakamura, Taira, Oakland, Education
Nakayama, Fumiya, Kyoto, Japan, Mech. Eng.
Nash, Edward Jay, Palo Alto, Elec. Eng.
Nash, Howard Frank, Palo Alto, Elec. Eng.
Neff, Andrew Love, Salt Lake City, Utah, History
Neff, Clarence Wilson, Fallbrook, Mech. Eng.
Neill, Minnesota Florence, Palo Alto, German
Nelson, Elizabeth, Minneapolis, Minn., English
Nelson, Ina May, Lake Valley, N. M., Chemistry
Newcomb, Mary Alice, Palo Alto, English
Ph. B., University of the Pacific, 1889.
Newcomer, Robert Hitt, Mt. Morris, Ill., Economics
Newland, Lloyd, Palo Alto, Law
Newman, Fred Conrad, Dyerville, Civil Eng.

Newman, James Vincent,	Woodside,	Civil Eng.
Newman, Matilda Vance,	Stanford Univ.,	History
Nibley, Joel,	Logan, Utah,	Law *Sp.*
Nicholson, Anne Mary,	San José,	Education
A. B., Stanford, 1904.		
Nightingill, Frank William,	Oakland,	Law
A. B., Stanford, 1905.		
Nims, Charles Brewster,	Muskegon, Mich.,	Geol.-Min.
Nims, Joy,	Pacific Grove,	Chemistry
Nissen, James Garfield,	Livermore,	History
Nissen, Roger Christian,	Livermore,	Geol. and Min.
Nobs, Frederick William,	Redwood City,	Geol. and Min.
Nobs, Hattie Elsa,	Redwood City,	German
Nohara, Shigeroku,	Kyoto, Japan,	Zoology
Nordhoff, Charles Bernard,	Redlands,	Economics
Nordman, Berthold,	San Francisco,	Elec. Eng.
Norton, Janet Swift,	San Francisco,	Chemistry
Norvell, Louise,	Merced,	History
Nye, Helena May,	Marietta, Ohio,	German
Ph. B., Marietta College, 1902.		
O'Brien, Mabel Genevieve,	Merced,	History
Ochsner, Washington Henry,	Lexington, Ky.,	Geology
Officer, Elizabeth Logan,	Salt Lake City, Utah,	English
Ogden, Benjamin Franklin,	Moline, Ill.,	English
Ogier, Margaret,	San José,	Zoology
Omori, Hyozo,	Stanford Univ.,	Economics
O'Neal, Josiah Philip,	Fallbrook,	Mech. Eng.
O'Neill, Helen Howard,	San José,	Physics
Oppenheim, Morris,	San Francisco,	Law
Orcutt, Mary Eva,	Santa Paula,	Latin
A. B., University of California, 1902.		
Osborn, Mabelle Frances,	Palo Alto,	French
Osborne, Clarence Bristol,	Los Angeles,	Geol. and Min.
Osborne, Edith Helen,	Los Angeles,	Drawing
Osborne, Raymond Gaylord,	Los Angeles,	Mining Eng.
Osburn, Percy Pirtle,	Pasadena,	English
Osgood, Charles Sumner,	San José,	English
Overman, Benjamin Charles,	Mattoon, Ill.,	Mining Eng.
Owen, Elise Dorrance,	Stockton,	History
Packard, Ashley Burdett,	Naco, Ariz.,	Law
Paine, Charles Treat,	Redlands,	Entomology
Paine, Charlotte,	Redlands,	History

Paine, William Craig,	Redlands,	Elec. Eng.
Palisi, Joseph,	Sausalito,	Elec. Eng.
Palmer, Clayton Franklin,	Palo Alto,	Zoology
B. S., Boston University, 1897.		
Palmer, Jessie Bowen,	Palo Alto,	German *Sp.*
Park, Hugh, Jr.,	Redding,	Geology
Patterson, Hazel Moore,	Los Angeles,	English
Patterson, James Druillard,	Reno, Nev.,	Civil Eng.
Paxton, Charles Hugh,	Orange,	Mech. Eng. *Sp.*
Paxton, William Arthur,	Orange,	Drawing
Peach, Charles,	Stanford Univ.,	History
Pearce, Ellen Rose,	Hilo, H. I.,	English
Pearce, Louise,	Los Angeles,	Physiology
Pearsall, Eva,	Tacoma, Wash.,	English
Peaslee, Adelaide Jagger,	Pasadena,	German
Peaslee, Bertha Amelia,	Pasadena,	History
Peckham, Gertrude Catherine,	San José,	English
Pedlar, Calla Claire,	San Francisco,	English
Pedlar, Mary Hazel,	San Francisco,	English
Peek, Frank William, Jr.,	Mokelumne Hill,	Elec. Eng.
Peirce, Edith Alice,	Mesa Grande,	Zoology
Peltier, Victor Michel,	San Francisco,	Civil Eng.
Pemberton, John Rothwell,	San Francisco,	Civil Eng.
Pepper, Helen Neville,	Los Angeles,	Latin
Perkins, Clover,	Bakersfield,	Economics
Perry, Claire Minne,	Palo Alto,	French
Peters, Herman,	Luverne, Minn.,	German
Peterson, Alvin,	Ephraim, Utah,	English
Peterson, Aurora Matilda,	Redwood City,	Latin
Peterson, Ida May,	Middletown,	History
Petree, Nora Elma,	Palo Alto,	English
Petree, Oran Adrian,	Palo Alto,	Mech. Eng.
Pettingill, Tallahatchie,	Redlands,	History
Phelps, John Dudley,	San Francisco,	Chemistry
Phelps, Leta Louise,	Duluth, Minn.,	Mathematics
Philippi, Beatrice Genevieve,	Los Angeles,	English
Pier, Earl Harriman,	Santa Clara,	Law
Pierce, Charles Roy,	Palo Alto,	Law *Sp.*
Pierce, Gertrude Ruth,	Palo Alto,	English
A. B., Allegheny College, 1892.		
Pierce, Mildred Thurston,	San José,	English
Pierce, Samuel Hatch,	Palo Alto,	English *Sp.*

Pike, Robert Dickson,	San Francisco,	Mech. Eng.
Piper, Hermann Carl Robert,	Stillwater, Minn.,	Elec. Eng.
Pitman, Georgia Denne,	Palo Alto,	Zoology
Plagemann, Robert D.,	San Francisco,	Economics
Plummer, Gertrude May,	Rocklin,	Mathematics
Pole, Frances Charles,	Palo Alto,	Greek
Pollock, Ralph Carleton,	Greeley, Colo.,	Chemistry
Polson, Anna,	San José,	History
Pomeroy, Ernest Younger,	Palo Alto,	Geol. and Min.
Poore, Margaret Isabella,	Redding,	Education
Porter, Arthur M.,	Berkeley,	Elec. Eng.
Porter Mabel,	Calistoga,	Mathematics
	A. B., Stanford, 1905.	
Porterfield, Clyde Hampton,	Charleroi, Pa.,	English *Sp.*
Post, Margaret,	Redlands,	English
Potter, Rozeltha Lucile,	Santa Barbara,	English
Powell, Fred Wilbur,	Three Rivers, Mass.,	Economics
	A. B., Stanford, 1904.	
Powers, Jay Clay,	Stanford Univ.,	Law
Powers, Lena Budd,	Stanford Univ.,	English
Powers, Nelson Charles,	Capitola,	German
Pratt, Robert Risdon,	Bridgeport, Conn.,	Mech. Eng.
Prescott, Basil,	San Diego,	Mech. Eng.
Presley, George Joseph,	San Francisco,	Law
Preston, Archibald Edward,	Santa Clara,	Geol. and Min.
Price, Berdella,	Soquel,	Latin
Price, Jacob Meday,	Palo Alto,	Chem. Eng.
Proctor, Asa Glisson,	Woodland,	Civil Eng.
Procter, James Norris,	Saticoy,	Zoology
Proebstel, Chester Lloyd,	Corvallis, Ore.,	Geol. and Min.
	B. S., Oregon Agr. College, 1904.	
Pryor, Nelson,	St. Louis, Mo.,	English *Sp.*
Pugh, Doris,	Redwood City,	English
Pugh, Harriet Holmes,	Redwood City,	History
Quertermous, Roy Crawford,	Santa Cruz,	Civil Eng. *Sp.*
Ramsay, Lilian,	Palo Alto,	Entomology
Ramsay, Reginald Crawford,	Palo Alto,	Geol. and Min.
Randall, Charles Alfred,	Redding,	Mining Eng. *Sp.*
Randall, Josephine Louise D.,	Stanford University,	Zoology
Randall, William Ramsey D.,	Stanford Univ.,	Physiology
Rawdon, Mary Ellen,	Palo Alto,	English
Ray, James Chandler,	Stanford Univ.,	Geol. and Min.

Ray, Mabel Clara,	Long Beach,	Zoology
Raymond, Claudius H.,	Los Angeles,	Economics
Reardon, Joseph Erwin,	San José,	Law
Redman, Frank M.,	Fargo, N. D.,	Elec. Eng.
Reed, Haines Wadsworth,	Los Angeles,	Economics
Reed, Inez Whitmore,	Junction City,	Mathematics
Reed, Samuel Payne, Jr.,	Stanford Univ.,	Elec. Eng.
Reeves, William Clyde,	Hillsboro, Ore.,	Geology
Reeves, Edna Mary,	Ukiah,	Zoology
Reilly, John Franklin,	Portland, Ore.,	Law
Reinhart, Anna,	Olympia, Wash.,	Drawing
Reyburn, Glenn William,	Fresno,	Physiology *Sp.*
Reynolds, Delmar Milton,	Pasadena,	English
Rhyne, Homer,	Paso Robles,	Geol. and Min.
Rice, Daisy Ardine,	Santa Ana,	Latin
Rice, Edward Waldo,	Fallbrook,	Chemistry *Sp.*
Rice, George Stanley,	Redwood City,	Law
Richards, Alice May,	San Francisco,	English
Richards, Dexter Newell,	Gridley,	Physiology
Richardson, Karl Asa,	Worcester, Mass.,	Civil. Eng.
Riddell, Harry Starr,	Coronado Beach,	Drawing
Riddell, John Henry,	Brazil, Ind.,	Civil Eng.
Riner, Gertrude,	Cheyenne, Wyo.,	French
Riner, Ida May,	Cheyenne, Wyo.,	English
Ritchie, William,	Fields Landing,	Law
Riter, Lynville Calder,	Salt Lake City, Utah,	Econ. *Sp.*
Rittenhouse, David Franklin,	Ostrander, Ohio,	Economics
Rittenhouse, Emmet Cloyd,	Santa Cruz,	Law
A. B., Stanford, 1904.		
Rixford, Katherine Tillinghast,	San Francisco,	French
Roberts, Charles Royden,	San Diego,	Philosophy
Robertson, Harry,	Redwood City,	Mech. Eng.
Robinson, Edith Emma,	Salinas,	Latin
Robinson, Ethel Margaret,	Palo Alto,	Mathematics
Robinson, Lucy Adeline,	Los Angeles,	Mathematics
Robinson, Sarah Alice,	Oakland,	Drawing
Robinson, Thomas Edgar,	Palo Alto,	Law *Sp.*
Robotham, Edna May,	Redlands,	French
Rockey, Eugene Watson,	Portland, Ore.,	German
Rockwell, Guy Lionel,	Compton,	Romanic Lang.
Roedel, Alice Louise,	San Mateo,	Latin

Roehr, Frank,	San José,	Law
A. B., Stanford, 1904.		
Rogers, Thomas Farwell,	San José,	Civil Eng.
Roller, Jennie Josephine,	Palo Alto,	Drawing
Ronzone, Silvio Espy,	Redlands,	Chemistry
Rook, Ross Henry,	Youngstown, Ohio,	Geol.-Min.
Roop, Wendell Prescott,	Oakland,	Physics
Roosevelt, Will Kelley,	Ackley, Iowa,	Mining Eng.
Roscoe, William Wallace,	Upper Mattole,	History
A. B., Stanford, 1905.		
Rose, Andrew Henry,	Ontario,	Law
Rose, Mary Ada,	Compton,	Drawing
Rosenberg, Albert H.,	Phoenix, Ariz.,	Elec. Eng.
Rosenberg, Leo M.,	Phoenix, Ariz.,	Mining Eng.
Rosenfeld, Arthur,	Portland, Ore.,	Physiology
Rosenfeld, James Wendal,	Portland, Ore.,	Physiology
Ross, Carl Thorburn,	Astoria, Ore.,	Physiology
Ross, George Rex,	Jerome, Ariz.,	Mech. Eng.
Ross, Hall Carlos,	Belmont,	Law
A. B., Stanford, 1903.		
Ross, Harry Scott,	Pasadena,	Chemistry
Ross, Lee Thornton,	Belmont,	History
Ross, Perley Ason,	Fallbrook,	Elec. Eng.
Ross, Samuel Boyd,	Dubois, Pa.,	Physiology
Rossiter, Ernest,	Palo Alto,	Elec. Eng.
Rowe, Ethel Elizabeth,	Putnam, Conn.,	German
Rowell, Bernice C.,	Easton,	German
Rowell, Ola,	San José,	Zoology
Ruggles, Howard Edwin,	San Francisco,	Physiology
Rule, Orville Rey,	Los Angeles,	Law
Russell, Lawrence Greenleaf,	San Francisco,	Mech. Eng. *Sp.*
Rust, Everett Winder,	Pasadena,	Botany
Ryone, LeRoy Tracy,	San Francisco,	Economics *Sp.*
St. John, Milton Hiram,	Mountain View,	History *Sp.*
St. Johns, Mabel,	Whittier,	English
Sales, Dudley Daniel,	Denver, Colo.,	Law
Salisbury, Helen Molyneaux,	Los Angeles,	English
Salisbury, Stuart McFarland,	Los Angeles,	History
Sanborn, Clarence Charles,	Tilton, N. H.,	Economics *Sp.*
Sanborn, Gertrude Elizabeth,	Yuba City,	History
Sankey, Stella Belle,	Palo Alto,	Drawing *Sp.*
Saunders, Arthur Bertram,	San Francisco,	Mech. Eng.

Saunders, Benjamin Rankin,	Redwood City,	Geol. and Min.
Savage, Henry Ennis,	Salem, Ore.,	Chemistry
Savage, Harry King,	Stanford Univ.,	Civil Eng. *Sp.*
Sawyer, Ernest Walker,	Braceville, Ill.,	Civil Eng.
Sayre, Edith Athalia,	San Francisco,	Economics
Schaaf, Albert Herman,	Fort Wayne, Ind.,	Elec. Eng.
Schaupp, Ernest G.,	Santa Rosa,	German
Schlessinger, Arthur C.,	San Francisco,	Physics
Schmidt, Arthur Albert,	Chicago, Ill.,	Physiology
Schnack, Ferdinand John H.,	Honolulu, H. I.,	Law
Schneider, Florence Margaret,	Palo Alto,	Zoology
Schrader, Gustave,	Los Angeles,	Geol. and Min. *Sp.*
Schulz, Lou Ernest,	Porterville,	Mech. Eng.
A. B., Stanford, 1905.		
Schwabacher, Samuel Isaac,	San Francisco,	Chemistry
Scott, Bert Carlisle,	Alameda,	Mech. Eng.
Scott, Linda Maud,	Los Angeles,	English
Scoville, Gilbert Lafayette,	Corona,	Elec. Eng.
Scudder, John Lawrence,	Ogden, Utah,	Chemistry
Seadler, Ruth Estelle,	San Francisco,	Economics
Seale, Alvin,	Palo Alto,	Zoology
Seargeant, Lawrence Herring,	Pasadena,	Mech. Eng.
Sears, Maud May,	Blocksburg,	Physiology
Seibert, Donald Kingsland,	San Francisco,	Law
Seifried, Charles F.,	Denver, Colo.,	Civil Eng.
Sellers, Walter Ray,	Palo Alto,	Civil Eng.
Severance, Harriet Crittenden,	Arrowhead,	English
Severy, Clarence Luther,	Pasadena,	Geol. and Mining
Severy, Hazel Wood,	Pasadena,	Chemistry
Sevier, Florence M.,	Eureka,	Latin
Seybolt, Marion Leigh,	Oakland,	English
Shaner, George Franklin,	Los Gatos,	Law
Shearer, William McConnell,	San José,	Chemistry
B. S., Univ. of the Pacific, 1903.		
Sheehy, John Joseph,	San Rafael,	Geology
Sheibley, Edward Gwyn,	Tiffin, Ohio,	Civil Eng.
Shelley, Helen Hjerleid,	San José,	History
A. B., Stanford, 1900.		
Shelton, William Cortez,	San José,	Law
Sheridan, Thomas Harold,	Chicago, Ill.,	Mech. Eng.
Sherman, Edward Willard,	Palo Alto,	Elec. Eng.
Sherman, James Haven,	Compton,	Mech. Eng.

Sherriffs, Alexander,	San José,	Law
Sherry, Ralph Harrison,	Troy, N. Y.,	Chemistry
	A. B., Stanford, 1904.	
Sherwood, Minor Correll,	Oklahoma City, Okla.,	German
Shibamiya, Yasohiko,	Tokyo, Japan,	English
Shields, Harvey,	Eureka,	Elec. Eng.
Shields, James Ralph,	Santa Clara,	Elec. Eng.
Shutt, Nathan Emery,	Santa Monica,	Chemistry
Shutts, Fred Ordway,	Los Angeles,	Civil Eng.
Silent, Chester,	Los Angeles,	Law
Simon, Elizabeth,	Santa Rosa,	German
Simpson, Emma Louise,	Mountain View,	German
Simpson, Walter Irving,	Mountain View,	Education *Sp.*
Sindo, Michitaro,	Stanford Univ.,	Physiology *Sp.*
Singletary, Emory Grigsby,	San José,	Civil Eng.
Singletary, George Curtis,	San José,	Geol. and Mining
Sinnock, Frank Brown,	Quincy, Ill.,	Civil Eng.
Sirdevan, William Henry,	Olean, N. Y.,	Geol. and Min.
Slaven, Estella,	Palo Alto,	History
Slusher, Dale,	Pendleton, Ore.,	Geol. and Min.
Smith, Caroline Rowell,	Evanston, Ill.,	French
Smith, Carl Delaney,	Stephens, Ark.,	Geology
	A. B., Arkansas University, 1902.	
Smith, Charles Piper,	Indianapolis, Ind.,	Zoology
	B. S., Purdue University, 1903.	
Smith, Edgar C.,	Pocatello, Idaho,	Civil Eng.
Smith, Ernest Nathaniel,	Honolulu, H. I.,	Law
Smith, Frank Gerard,	Portland, Ore.,	Law
Smith, George William,	Denver, Colo.,	Elec. Eng.
Smith, Harold Fred,	Campbell,	History
Smith, Harold Heber,	Los Angeles,	Physiology
Smith, Mildred,	Redwood City,	English
Smith, Putnam Busk,	Ferndale,	Law
Smith, Reba,	Los Angeles,	French
Smith, Richard Garbett,	Los Angeles,	Geology
Smith, Stanley,	Redwood City,	Romanic Lang.
	A. B., Stanford, 1903.	
Smith, Stuart Sawyer,	Campbell,	Economics
Snyder, Edwin Reagan,	San José,	Education
Soper, Edgar Kirke,	Palo Alto,	Geol. and Min.
Soule, Claire,	San Bernardino,	History
	A. B., Stanford, 1905.	

Spalding, Jane McCormick, Los Angeles, English
Spalding, William Dennison, Los Angeles, Civil Eng. *Sp.*
Spaulding, Alice M., Springville, N. Y., English
Spaulding, Charles Edgar, Phoenix, Ariz., Elec. Eng.
Spaulding, Milo Herrick, Palo Alto, Zoology
A. B., Stanford, 1903.
Spencer, Alice Day, Palo Alto, Botany
Spencer, Edith Emerson, Los Angeles, English
A. B., Stanford, 1905.
Spencer, Omar Corwin, Stanford University, Law
Sprague, Helen Louise, Sacramento, Economics
Sprague, Manville Hewitt, Grafton, N. D., Mathematics
Springmeyer, George, Genoa, Nev., Law
A. B., Stanford, 1903.
Sprott, Walter Keith, Porterville, Mech. Eng.
Spurrier, George Otis, Paso Robles, English
Squire, Frank Carter, Claremont, Civil Eng.
Squire, Marjorie, Seattle, Wash., English
Squire, Mary Louise, Visalia, Physiology
Stack, Gertrude Leonore, Palo Alto, English
Stadtmüller, Ellen Smith, San Francisco, Physiology
Stafford, Grace Estelle, Eureka, History
Stagner, Charles Elmer, Wheatland, Physiology
Stallcup, Margery Bruen, Tacoma, Wash., Law
Stanford, James Nichols, Olympia, Wash., English
Stanley, Owen Garrett, Kelseyville, Mathematics
Starbuck, Flora Edna, Palo Alto, English
Stearns, Myron Morris, Hartford, Conn., Law
Steel, Donald, Brownsville, Geol. and Min.
Steele, George, Los Angeles, Elec. Eng.
Steele, Viola Alice, Los Angeles, English
Stephens, Elsie Jane, Palo Alto, German *Sp.*
Sterling, Edward Canfield, Redlands, Civil Eng.
Stevens, Archie McDonald, Palo Alto, Mech. Eng.
Stevens, Carl Colton, St. Albans, Vt., Civil Eng.
Stevens, Esther Stuart, Berkeley, English
Stevens, George Richards, Benicia, Geol. and Mining
Stevenson, Cornelia, Seattle, Wash., English
Stewart, Alexander Barnes, Los Angeles, Economics
Stewart, John Elmer, Parkville, Mo., Law
Stewart, Paul, Los Angeles, Law
Stillman, Edgar, Sausalito, German

Stillson, Harriet Alice,	Palo Alto,	German
Stokes, Ora,	Pasadena,	Mathematics
Stolz, Mary Rosalie,	Redlands,	English
Stone, Alice Grace,	San José,	Latin
Stork, Victor Eytinge,	Sierra Madre,	Physiology
Stott, Edmund Plowden,	Portland, Ore.,	Law
Street, Horace Marvin,	Sonora,	Law
Streeter, Olive Louisa,	Cupertino,	English
Strong, Charles Arthur,	Portland, Ore.,	Civil Eng.
Strong, Harold William,	Corvallis, Ore,	Law
Stroud, Genevieve,	Alhambra,	English
Stroud, Gertrude Esther,	Alhambra,	English
Strout, Gale Stanley,	Sebastopol,	Civil Eng.
Strunsky, Rose,	San Francisco,	History
Studley, Clarence Knight,	Adin,	Physics
A. B., Stanford, 1905.		
Stuntz, William Oliver,	Suisun,	Botany
Sturgiss, Lillian Gardner,	Chicago, Ill.,	English
Suits, Charlotte Belle,	Palo Alto,	English
Suits, Clarence Leroy,	Palo Alto,	Chemistry
Sullivan, Florance Francis,	Oregon City, Ore.,	Geol.-Min.
Sumner, Walter Augustus,	Denver, Colo.,	Law
Swayne, Warren Hasting,	Alameda,	Law
Sweetland, Eulavelle,	Lemoore,	Physiology
A. B., Stanford, 1905.		
Swift, Ernest John,	Hanford,	History *Sp.*
Swift, Ruth,	Santa Cruz,	German
Swift, Vega,	Santa Cruz,	English
Swinerton, Alfred Bingham,	San Francisco,	Geology
Swing, Phil David,	San Bernardino,	Law
Symonds, Bessie Marjorie,	San José,	Physiology
Taber, Stephen,	Richmond, Va.,	Min. Eng.
Taft, Harris Welch,	Santa Monica,	Law
Taft, Muriel Charlena,	Santa Monica,	English
Taft, Wilber R.,	Palo Alto,	Economics
Talavera, Francisco,	Orizaba, Mexico,	Elec. Eng.
Talbert, Franklin Lilburn,	San José,	Economics
A. B., Stanford, 1905.		
Tarbell, George Armstrong,	Cumberland, B. C.,	El. Eng. *Sp.*
Tarbell, Olga S.,	Santa Rosa,	Zoology
A. B., Stanford, 1905.		
Tarbell, Ruth Georgia,	Santa Rosa,	English

Taverner, Clara Louise,	San Francisco,	English
Taylor, Alfred Loomis,	Irwin, Pa.,	Geol. and Min.
Taylor, Charles Bertrand,	Stanford Univ.,	Civil Eng.
Taylor, William Ross,	Palo Alto,	Physiology
Teal, Stebbins Chester,	Oakland,	Geol. and Min. *Sp.*
Tebbetts, Edith Mary,	Whittier,	Mathematics
Thayer, Lloyd Waldo,	San José,	Geol. & Min.
Thayer, Mabel Rozella,	Mayfield,	Mathematics
Theile, William Christian,	Emmetsburg, Iowa,	Law
Thiriot, George Milton,	Santa Clara,	English
Thoburn, Helen,	Palo Alto,	German
Thomas, Beulah Ruth,	Palo Alto,	Law *Sp.*
Thomas, Frank Holman,	Ukiah,	Geol. and Min.
Thomas, George M.,	Santa Rosa,	Law
Thomas, Halbert Ray,	Los Angeles,	Elec. Eng.
Thomas, Micajah Anderson, Jr.,	Ukiah,	Law
A. B., Stanford, 1904.		
Thompson, Charles Silent,	Alameda,	Zoology
Thompson, Clara Gussefeld,	Palo Alto,	German
Thompson, Ewing Charles,	Lewiston, Idaho,	Mathematics
Thompson, James Cooper,	Santa Barbara,	Chemistry
Thompson, John Hamer,	San José,	Entomology
Thompson, Mary Evangeline,	Palo Alto,	Entomology *Sp.*
Thompson, Robert A.,	Palo Alto,	Education
Thompson, Seth Blaine,	Butte, Mont.,	Law
Thomson, Hugh Leslie,	Burlington, Vt.,	Chemistry
Thomson, Jessie Giffen,	Stanford Univ.,	German
Thomson, William Henry,	Palo Alto,	History
Thorne, Nancy Cordelia,	Los Gatos,	English
Thorpe, Merle Harrold,	Ellsworth, Kansas,	Law
Tiffany, Edith Mildred,	San José,	History
Tilton, Frederic LeRoy,	Colorado Springs, Colo.,	English
Timmons, Myrtle Leonore,	Santa Ana,	English
Titus, Charles Mantor,	Freestone,	Mathematics
A. B., Stanford, 1904.		
Tomasini, Almo,	Palo Alto,	Civil Eng.
Topp, Roger,	New York, N. Y.,	Mech. Eng.
Towne, Dwight Fox,	San Bernardino,	Civil Eng.
Townsend, Vera,	Palo Alto,	German
A. B., Stanford, 1901.		
Traphagen, Hazel Adah,	Los Angeles,	Physiology
Traphagen, Katharine Ethel,	Pasadena,	English
A. B., Stanford, 1905.		

Treat, Payson Jackson,	New York, N. Y.,	History
A. B., Wesleyan Univ., 1900; A. M., Columbia Univ., 1903.		
Trost, Brice Loveland,	Ferndale,	Geology
Trowbridge, Alfred Lockwood,	Portland, Ore.,	Civil Eng.
Trowbridge, Frank Hudson,	Portland, Ore.,	Elec. Eng.
Truxel, Francis Marion,	San Francisco,	Civil Eng.
A. B., Franklin and Marshall Coll., 1901.		
Tucker, Frank Blackburn,	Washington, D. C.,	Greek
A. B., Stanford, 1904.		
Tucker, William Henry,	San José,	Law
Tufts, Frank Alphonso,	Loomis,	Elec. Eng. *Sp.*
Turner, Frank Warren,	Oakland,	Geol. and Min. *Sp.*
Turner, Maude Elizabeth,	Talmage,	Latin
Turner, Waldo Egerton,	San José,	Law
Twombly, Harriet Elizabeth,	Palo Alto,	Physiology
Uchida, Yausuke,	Yamaguchi, Japan,	English
Underwood, Maro Franklin,	Palo Alto,	English *Sp.*
Upham, Augusta May,	Palo Alto,	German
Vail, Stanley Marshall,	San Francisco,	Economics
Valdes, Robert,	Mayfield,	Elec. Eng.
Valentine, Percy Friars,	Sacramento,	Law
Van Bergen, Edgar Nicholous,	San Mateo,	Economics
Vandervoort, Theodore, Jr,	Palo Alto,	Geol. and Mining
Van Norden, Maximilian L.,	Sacramento,	Geology
A. B., Stanford, 1905.		
Van Sickle, True,	San José,	Law
Vertrees, Clarence E.,	San Jacinto,	Mech. Eng.
Vestal, Maxwell,	San José,	Elec. Eng.
Vickers, Anna,	Los Angeles,	English
Vickers, Clara,	Los Angeles,	German
Villegas, D. George Andrew,	Santiago de Chile,	Civil Eng.
Voris, Elizabeth,	Akron, Ohio,	Latin
Voss, Maxwell Hughes,	Palo Alto,	Elec. Eng.
Wagner, Adela Beatrice,	Ventura,	History
Wakeman, Earl Seeley,	Campbell,	English
Wallace, Ethel,	Visalia,	English
Ward, Clair Wyman,	Moretown, Vt.,	Law
Ward, John McCartney,	Chula Vista,	Law
Ward, Lou Johnstone,	Los Angeles,	English
Ward, Milola Joy,	Portland, Oregon,	English
Ward, Wendell William,	Los Angeles,	German
Waring, Gerald Ashley,	Fallbrook,	Geology

Warner, Isabelle,	Palo Alto,	English
Warren, Edwin Vincent,	Pacific Grove,	Zoology *Sp.*
Wassman, Max, Jr.,	San José,	English
Watanabe, Teiichiro,	Tokyo, Japan,	Civil Eng. *Sp.*
Waterhouse, Ruth Angeline,	Palo Alto,	English
Wathey, Mary Kate,	Palo Alto,	German
Wathey, Ralph Lockwood,	Palo Alto,	Chemistry
Waxham, Marjorie Evelyn,	Stanford Univ.,	English

A. B., Wellesley College, 1898.

Weaver, Gertrude Benjamin,	Palo Alto,	Latin
Webb, Leslie Judson,	San Diego,	Law
Weinmann, Louis Randolph,	Alameda,	Law
Weisel, Hans Victor,	Anaheim,	Law
Weiser, Charles William,	Grand Junction, Colo.,	Law

Ph. B., Colorado College, 1902.

Weller, Milo James,	Ft. Bragg,	Civil Eng.
Wellman, Anna Winifred,	Carlsbad,	English *Sp.*
Wells, Albert Huntington,	Auburn, N. Y.,	Chemistry
Wenger, Beatrice Mae,	Los Angeles,	Greek
Wenk, Morris,	Stockton,	Elec. Eng. *Sp.*
Wentz, Walter Yeeling,	San Diego,	English
Werner, Oscar,	Los Angeles,	Mech. Eng.
West, Franklin Lorenzo,	Ogden, Utah,	Chemistry

B. S., Utah Agr. College, 1904.

West, Raymond Fred,	Seattle, Wash.,	Law
Westfall, Victor Barbee,	Fallbrook,	Economics
Westwick, Robert,	Santa Barbara,	Mech. Eng.
Whitaker, Frederick Prescott,	Stanford University,	Law
White, John Blackwood,	Spokane, Wash.,	English
Whiteman, Luther Herbert,	Orosi,	Geol. & Min.
Whitmire, Ethel Dorothy,	San José,	Latin
Whitney, Max Brooks,	Lostant, Ill.,	German *Sp.*
Wiegel, Louis H.,	San Francisco,	Law
Wilde, Herbert Russell,	Dobbs Ferry, N. Y.,	Elec. Eng.
Wilhelm, Frederick S.,	Portland, Ore.,	Law
Wilhelm, Victor H.,	Portland, Ore,	Geol. & Min.
Wilkins, Helen Morse,	Bolinas,	English
Will, Roland Tracy,	Redlands,	Chemistry
Williams, Edwin Eugene,	Sandusky, Ohio,	Chemistry
Williams, Francis,	San Francisco,	Physiology
Williams, Francis Xavier,	San Francisco,	Entomology

A. B., St. Ignatius College, 1903.

Williams, George Morgan,	Palo Alto,	English
Williams, John D.,	Palo Alto,	English
Williams, Lenore Lorain,	Portland, Ore.,	English
Williams, Mary Wilhelmine,	Newman,	English
Williams, Paul S.,	San José,	Physiology
Williams, Tenney Davis,	San José,	English
Willoughby, Pearl Vivian,	Palo Alto,	History
Wilson, Arden Martin,	Cleveland, Ohio,	Geol. and Min.
Wilson, Emma Jean,	Los Angeles,	Latin
Wilson, Harriet L.,	Palo Alto,	Botany
Wilson, Horace S.,	Los Angeles,	Geol. and Min.
Wilson, Jessica Blythe,	San José,	History
Wilson, Julia Edna,	Palo Alto,	French
Wilson, Orrin Allen,	Clinton, Iowa,	Economics
A. B., Stanford, 1905.		
Wilson, William Webster,	Los Angeles,	Elec. Eng. *Sp.*
Winslow, Mercelia Anna,	Bartlett Springs,	English
Winslow, Ola Elizabeth,	Santa Clara,	English
Winter, Frank Cook,	Stanford Univ.,	Chemistry *Sp.*
Wintler, Carl Butler,	Portland, Ore.,	Law
Witwer, Roy Howard,	Kalamazoo, Mich.,	Chemistry
Wolff, Marcus,	San Francisco,	Economics *Sp.*
Wolfley, May,	Stanford Univ.,	English
Wollenberg, Fred H.,	San Francisco,	Economics
Wood, Dallas England,	Merced,	English
Wood, John Graham,	Indianapolis, Ind.,	Mech. Eng.
Wood, Lydia Mae Tripp,	Palo Alto,	Botany
Wood, Percy Addison,	Sacramento,	Law
Wood, Walter Edwin,	Whittier,	Chemistry *Sp.*
Woods, Pansy May,	Palo Alto,	English
Woods, Robert S.,	Los Angeles,	Elec. Eng.
Wotkyns, Benjamin Marshall,	Pasadena,	History
Wright, Elizabeth Agnes,	Plymouth, Mass.,	German
Wyatt, William Troy,	Philomath, Ore.,	Education *Sp.*
Wyckoff, Harry Alphonso,	Palo Alto,	Physiology
Wynne, Estella Frances,	San Francisco,	English
Yantis, Frances A.,	Lewiston, Idaho,	English
Yasuda, John Katsukichi,	San Francisco,	Psychology
Yocum, Eliza Hinchman,	Berea, Ky.,	German
A. B., Penn College, 1883, A. M., 1897.		
Yoder, Noah S.,	Palo Alto,	English
Yoell, Beatrice Ethel,	San Francisco,	French

Yorke, Edwina,	Sacramento,	English
Yoshimi, Masashi,	Tokyo, Japan,	Education
Young, Albert Loftus,	Portland, Ore.,	Physiology
Young, Clarence R.,	Eureka,	Elec. Eng.
Young, Edith Mae,	Lansing, Iowa,	English
	Ph. B., Cornell College, 1892.	
Young, William Thomas,	Ft. Jones,	Physiology
Zimmerman, Fred,	Portland, Ore.,	Economics
Zoffman, George Fred,	Jolon,	Geol. and Min.
Zschokke, Irma Julia,	Palo Alto,	Economics

SUMMARIES

Officers

Trustees		15
Faculty		
Professors	31	
Associate Professors	24	
Assistant Professors	27	
Instructors	34	
Assistants	35	151
Other Officers		51

Students

In Graduate Standing	99
Undergraduates	1351
Special Students	118
Total	1568

By Departments

Major Subject	Graduate	Undergraduate	Special	Total	*No. Stud'ts taking work	*Sum of all Class Lists
Greek	1	9	...	10	†281	348
Latin	4	58	...	62	‡185	300
German	7	77	4	88	388	590
Romanic Languages	1	41	1	43	292	388
English	10	207	9	226	652	1050
Biblical History	...	..	...	...	254	293
Philosophy	...	3	...	3	.....	.....
Psychology	3	2	...	5	124	147
Education	4	13	4	21	282	362
History	7	80	6	93	423	603
Economics	2	82	6	90	258	336
Law	16	175	18	209	105	337
Drawing	3	14	2	19	61	101
Mathematics	6	26	1	33	315	499
Physics	2	8	...	10	156	168
Chemistry	6	79	8	93	193	346
Botany	5	13	...	18	68	76
Physiology	5	57	9	71	98	147
Hygiene	...	...	...	...	418	479
Zoology	9	28	2	39	88	115
Entomology	2	8	2	12	25	25
Bionomics	...	...	...	...	131	131
Geology	2	112	10	124	129	232
Engineering	...	...	...	...	160	161
Civil Engineering	3	102	13	118	81	98
Mechanical Engineering	...	57	14	71	256	423
Electrical Engineering	1	100	9	110	27	80
Manual Training	...	...	...	...	125	125
Bibliography	...	...	...	...	17	17
Music	...	...	...	...	57	57

*Second semester.

† Including 257 in classes not requiring a knowledge of Greek.

‡ Including 74 in classes not requiring a knowledge of Latin.

By Residence

California	1188	Kentucky	3
Oregon	46	Nebraska	3
Illinois	34	Wisconsin	3
Colorado	25	Texas	3
Iowa	24	New Mexico	3
New York	21	North Dakota	3
Washington	21	Rhode Island	3
Utah	20	New Hampshire	2
Ohio	16	Oklahoma	2
Arizona	13	South Dakota	2
Indiana	13	Wyoming	2
Montana	13	Georgia	1
Minnesota	9	Maryland	1
Idaho	8	Tennessee	1
Massachusetts	8	Virginia	1
Missouri	8	West Virginia	1
Hawaii	7	Japan	9
Pennsylvania	6	Canada	5
Connecticut	5	Mexico	5
Michigan	5	Bermuda Islands	1
Nevada	5	Chile	1
Arkansas	4	England	1
Vermont	4	Holland	1
District of Columbia	3	Hungary	1
Kansas	3	Roumania	1

California by Counties

Alameda	33	Mendocino	12	Santa Barbara	15
Amador	1	Merced	5	Santa Clara	448
Butte	5	Modoc	2	Santa Cruz	16
Calaveras	1	Monterey	10	Shasta	6
Colusa	1	Napa	5	Solano	7
Contra Costa	2	Orange	21	Sonoma	16
Del Norte	1	Placer	2	Siskiyou	1
Fresno	11	Riverside	28	Stanislaus	5
Humboldt	18	Sacramento	15	Sutter	3
Inyo	2	San Benito	1	Tehama	3
Kern	7	San Bernardino	56	Trinity	1
Kings	3	San Diego	37	Tulare	12
Lake	5	San Francisco	110	Tuolumne	1
Los Angeles	178	San Joaquin	14	Ventura	5
Madera	1	San Luis Obispo	10	Yolo	5
Marin	8	San Mateo	35	Yuba	4

DEGREES CONFERRED

May 18, 1904, *September 9, 1904, †January 13, 1905

BACHELOR OF ARTS

GREEK

Gertrude Mary Smith
Frank Blackburn Tucker

LATIN

Mabel Jean Barnhouse
Ruth Wentworth Brown
A. B., Univ. of Southern California.
Lillian Garland Chapman
Mary Cochrane
Nellie Brooks Courtright
Amy Louise Dunn
Eldora Freeman
Kate Louise Gridley
Ovid Herbert Ritter
Claire Frederica Sweetman
Elizabeth Clementine Yoch

GERMANIC LANGUAGES

†Charlotte Wakerley Brownlie
†Edith Margaret Coulter
Ethel Hilda Foster
Frances Cornelia Harrenstein
†John Peabody Harrington
Bessie Florence Hill
†Mary Ludavaine Klaine
Laura Ingeborg Nagel
Myrtle Brace Rosseter
Bertha Mary Yoch

ROMANIC LANGUAGES

Howell Chambers Brown
†Mary Downing Cocks
Sydney Leander Davis
Homer Price Earle
Alice Ben McGee
Sara Reid Park
Laura Cushman Perry
Kittie Louise Trader

ENGLISH

†Mame Adams
Florence Josephine Ashley
Mary Macbride Bartruff
†Lulu Mabel Beggs
Jessie Newcomb Bell
Marie Sophrene Burnham
Iva Lois Cary
Ruth Laird Kimball
Kathryn Romer Kip
Alice Arnold Lewers
Henry Koval Marks
Lulu Arminta Maulsby
†Arthur Tenny Merrill
†Irene Helen Moule

†Arthur Garfield Crane
Theodore Abijah Cutting
Marcus Elmo DeWitt
Charles L. Duncan
Ethel May Fifield
Yasunosuke Fukukita
Frances Rebekah Gardner
†Nina Jean Graham
Edith Mae Hale
Redolpho Braun Hummel
Frances Lois Kerr
Alice Windsor Kimball
Minnette Ada Parkhurst
Isaac Russell
Anne Lockerby Scott
Ada Louise Seifried
Louis Eugene Sisson
†Edith Emerson Spencer
Clara Stevenson
†Katherine Ethel Traphagen
May Earhart Vorhes
Fanny Emily Weller
James Yeiser

PSYCHOLOGY

George Snow Gibbs
A. B., Univ.of Utah.

EDUCATION

George Frederick Arps
†Fannie Ella Johnston
B. S. and M. S., Cornell Coll.
Anne Mary Nicholson
Mary Shannon Smith
Alvah Bing Way
Ph. B., Ottawa Univ.

HISTORY

Cecelia Freeman Atherton
Cleveland Hall Baker
Jessie Elizabeth Barnard
†Jane Louise Bean
Edna Geraldine Brown
Edith Folsom Edgerly
Mary Christine Foster
Anita Monarch Hathway
Edward Dean Lyman
Grace Agnes Noon
Elma Annette Raymond
Marion Frederick Reynolds
Telulah Nye Robinson
B. S. and M. S., Westfield Coll.
†William Wallace Roscoe
†Claire Soulé
Lawrence Caleb Spieth
Clinton Erwyn Stone
Winifred Wood
†Irene Aloha Wright

ECONOMICS AND SOCIOLOGY

†Noyes Latham Avery
Charles Willard Clapp
George H. Lutgerding
†John Casey McCaughern
Fred Wilbur Powell
Antone Silvey
†Franklin Lilburn Talbert
Oliver George Wolcott
*Harry Augustus Weihe
†Orrin Allen Wilson
Emma Minerva Wright

LAW

Richardson Watts Barrett
John Titus Cooper
Walter Francis Dunn
Charles Ludwig Firebaugh
James Sweeny Giles
Hjalmar Edwin Holmquist
John Leslie Johnston
Edgar Axton Jones
Robert Bruce Knight
Roy Chilton Leib
Howard Milton Lewis
Harvey McCaslin
B. S., Kansas State Agri. Coll.
Seymour Thomas Montgomery
†Frank William Nightingill
Archibald Bennett Rhuart
Emmet Cloyd Rittenhouse
Frank Roehr
Micajah Anderson Thomas, Jr.
Charles Bassett Wooster
Harrold Egbert Worstell

DRAWING

Randal William Borough

MATHEMATICS

Eric Temple Bell
Thomas Arthur Blair
Ruth Fowler
Inez Hyatt
*Emery William McPhail
†Mabel Porter
*Charles Louis Searcy
Charles Mantor Titus
*Isadore Stuart Van Gilder

PHYSICS

Grace Hermanita Bruckman
†Clarence Knight Studley

CHEMISTRY

Jesse Marion Beach
†Walter Allen Crossman
Norman Eliot Dole
Ralph Damon Emerson
†Carlton Cheney James
Ralph Harrison Sherry
Margaret Bell Smith
Leo I. Sussman

BOTANY

Mabel F. Giles
B. L., Smith College.
†Minnie Laurie Mackay
†Mary Esther Moulton
Bertha Henney Thompson

PHYSIOLOGY AND HISTOLOGY

Lela June Beebe
Emelie Caroline Keiser
Mary Ettie Kinney
Harold Phillipp Kuhn
Alexander Edward McNee
Maud Passmore
Joseph Slack Swartzlander
†Eulavelle Sweetland

ZOOLOGY

Malcom Playfair Anderson
Mary Ruhama Cravens
William Charles Doane
†Olga S. Tarbell

ENTOMOLOGY

†Grace Cleone Camp

GEOLOGY AND MINING

Lester Daniel Frink
*Harold Sinclair Gay
Albert Smith Halley
Henry Liberty Hamilton
Walter Raleigh Hamilton
Orren Arthur Harlan
*Wheeler Oren North
Robert Nym Park
†Maximilian L. Van Norden
†DeWitt Charles Wiley

CIVIL ENGINEERING

Francis Joseph Batchelder
Elmer George Brua
Norman Collyer
George Cromwell
†Ray Lee Crowfoot
Hubert Harry Hall
Leonard Louis Hohl
†Thomas Benton Hunter, Jr.
George Clarence Jacobs
Arthur James McNeil
Frank Austin Nikirk
Augustus Taber Parsons
Lewis Eaton Smith

MECHANICAL ENGINEERING

Frank Oakes Ellenwood
†Lou Ernest Schulz

ELECTRICAL ENGINEERING

Edgar Augustus Behlow
Graham Leslie Garratt
†William Ernest McWethy

BACHELORS OF LAWS.

Charles A. Cantwell, A. B.
Arthur Edward Cooley, A. B.
Herbert Coffin Jones, A. B.
George Martinson, A. B.
Edward Walter Rice, A. B.
†Frederick Schneider

MASTERS OF ARTS

GREEK

†Esther Crandall, A. B.
Irmagarde Richards, A. B.

LATIN

†Anna Laura Dunlap, A. B.

GERMANIC LANGUAGES

†Frances Evelyn McDowell, A. B.

ENGLISH

†Beatrice Montgomery
A. B., Smith College.

EDUCATION

William Bunyan Netherton
A. B., William Jewell Coll.

HISTORY

Lois Kimball Mathews, A. B.

MATHEMATICS

Pearl Colby Miller
B. S., Univ. of Michigan.

CHEMISTRY

Robert William Dodd, A. B. William Henry Sloan, A. B.
John Pearce Mitchell, A. B.

BOTANY

Adolph Daniel E. Elmer
B. S., Washington Agr. Coll.

Susan Gabriella Stokes, A. B.
†Clara Alice Tompkins, A. B.

ZOOLOGY

†James Francis Abbott, A. B.

ENTOMOLOGY

Ruby Green Bell, A. B.

GEOLOGY

Warren DuPré Smith
B. S., Univ. of Wisconsin.

ENGINEER

GEOLOGY AND MINING

*David Morrill Folsom, A. B.

MECHANICAL ENGINEERING

Lewis Andrew Darling
B. M. E., Kentucky State College.

DOCTOR OF PHILOSOPHY

William Albert Manning, A. M. *Pehr Hjalmar Olsson-Seffer

ALUMNI ASSOCIATION

Organized June 15, 1892

CONSTITUTION

In order to promote the interests of the University, to secure unity among its graduates, and to foster an attachment to our *Alma Mater,* we do hereby constitute ourselves an association to be known as the Alumni Association of the Leland Stanford Junior University.

I. MEMBERSHIP

1. All persons who have received a degree from the Leland Stanford Junior University are members of this Association.

2. All members of the Faculty are honorary members of this Association.

II. OFFICERS

The officers of this Association shall be: (1) a President; (2) one Vice-President from each successive group of five classes (provided that when the last group shall number three classes it shall thereafter be entitled to a Vice-President); (3) a Secretary-Treasurer.

III. DUTIES OF OFFICERS

1. It shall be the duty of the President to preside at all business meetings of the Association, to deliver the President's address on Alumni Day, and to perform such other duties as usually belong to his office.

2. It shall be the duty of the Vice-Presidents, in the order of seniority of their groups, to preside in the absence of the President and to perform the other duties belonging to his office.

3. It shall be the duty of the Secretary-Treasurer to keep accurate minutes of the meetings of the Association and to act as Secretary of the Executive Committee, of which he shall be a member.

4. It shall also be the duty of the Secretary-Treasurer to have charge of the collection and disbursement of the funds of the Association.

5. The Secretary-Treasurer shall be allowed ten per cent of all dues or assessments collected, as compensation for his services.

IV. COMMITTEES

1. There shall be an Executive Committee consisting of the following persons: The Secretary-Treasurer of the Association, and three other persons chosen by the Association, one of whom shall be designated as Chairman of the Committee.

2. The President shall be ex-officio a member of all Committees.

3. At each annual business meeting the President shall appoint a Committee of two persons to audit the Treasurer's accounts.

V. DUTIES OF COMMITTEES

It shall be the duty of the Executive Committee to arrange for the literary programme to be presented on Alumni Day; or any programme for other public occasions; to regulate the finances of the Association; to perform such other duties as may be imposed upon it; and to attend to all business of the Association not otherwise provided for.

VI. ELECTIONS

1. The Officers of the Alumni Association shall be elected by ballot, a majority of all votes cast being necessary for election.

2. The Executive Committee shall be elected by ballot, a majority of all votes cast being necessary for election.

3. The election of officers and of the Executive Committee shall be held on Alumni Day at the annual business meeting.

VII. DUES

1. The dues of the Association shall be one dollar per year for each member thereof. This amount, however, may be changed by a majority vote at any annual business meeting of the Association.

2. Dues shall be collected from each member of the Association until he has made five annual payments.

VIII. AMENDMENTS

Any proposition to alter or amend these articles of association must be made at a regular meeting, and have the assent of two-thirds of the members present.

Officers for 1904-05

President:—William Jonathan Neidig, '96.

Vice-Presidents:—Herman De Clercq Stearns, 92, A. M., '93; Charles Marron Fickert, '98; Charles Ludwig Firebaugh, '04.

Secretary-Treasurer:—Charles Frederick Wright, '96, A. M., '97.

Executive Committee:—Ray Lyman Wilbur, '96, A. M., '97, Chairman; Harry B. Reynolds, '96; Thomas Marion Williams, '97; Charles Frederick Wright, '96, A. M., '97.

DIRECTORY OF OFFICERS

Post-office (in italics), if other than Stanford University; where no post-office is given *Stanford University* is understood. *P. A.* means Palo Alto post-office. Street address unless otherwise indicated, refers to the Campus or Palo Alto. The dagger (†) marks the names of men who are married. The numbers at the right refer to pages where further information may be found.

Name and Title	Residence	Page
†Abbott, N., Prof. Law,	318 Lincoln Ave., *P. A.*,	11, 104-108
†Adams, E. D., Assoc. Prof. Hist.,	3 Alvarado row,	14, 98-101
†Alden, R. M., Asst. Prof. Eng. Lit.,	455 University Ave., *P. A.*,	16, 87-92
Allardice, R. E., Prof. Math.,	[In Europe]	11, 110-112
Altnow, G. G., Asst. Library,	183 Encina Hall,	24, 148
†Anderson, M. B., Prof. Eng. Lit.,	Menlo Park,	9, 87-91
†Angell, F., Prof. Psychology,	1146 Waverly St.,	10, 93-94
Atherton, (Miss) C. F., Asst. Dept. Edu.,	11 Roble Hall,	22, 94
Ballantine, H. W., Instr. Law,	[San Francisco]	21, 104-108
Barnett, G. D., Asst. Applied Math.,	6 Lasuen St.,	22, 112-113
†Barnett, S. J., Asst. Prof. Physics,	321 Lytton Ave., *P. A.*,	16, 114-115
†Bassett, L. E., Instr. Elocution,	2 Salvatierra St.,	19, 87-89
Bell, (Mrs) R. G., Instr. Entomology,	5 Lasuen St.,	21, 133-134
Billings, W. E., Asst. Law Library,	College Terrace,	25, 148
Blichfeldt, H. F., Asst. Prof. Math.,	College Terrace,	16, 110-112
†Blodgett, B. C., Organist Memorial Church,	251 Emerson St., *P. A.*,	25, 154
Blynn, (Mrs.) H. S., Matron Roble Hall,	Roble Hall,	25
Bolton, (Miss) F., Asst. Roble Gym.,	19 Lasuen St.,	23, 128-130
Bonnell, J. K., Instr. English,	370 Addison Ave.,	21, 87-88
†Branner, J. C., Prof. Geology,	13 Alvarado row,	9, 134-137
Bristol, (Miss) S. B., Asst. to Registrar,	1 Salvatierra St.,	24
†Brown, C. R., Lecturer Ethics,	322—22d St., Oakland,	16, 92-93
Brown, (Mrs.) G. N., Asst. Physics,	411 Lytton Ave., *P. A.*,	22, 114
†Brown, J. G., Instr. Physics,	411 Lytton Ave., *P. A.*,	19, 114-115
†Browne, A. A., Asst. Prof. Mech. Arts,	[Tempe, Ariz.]	17, 143
Burbank, L., Lecturer Plant Evolution,	[Santa Rosa]	18
Burke, W. E., Asst. Chemistry,	603 Lytton Ave., *P. A.*,	22, 116
Byxbee, J. F., Jr., Asst. Civil Eng.,	347 Alma St., *P. A.*,	23, 140
Campbell, D. H., Prof. Botany,	19 Salvatierra St.,	10, 121-122
†Cannon, H. L., Instr. History,	219 Addison Ave., *P. A.*,	20, 98-100
Cathcart, A. M., Instr. Law,	334 Lincoln Ave., *P. A.*,	20, 104-107
†Chappel, H. W., Instr. Hygiene,	7 Salvatierra St.,	20, 128-129
†Clark, A. B., Assoc. Prof. Drawing,	College Terrace,	13, 108-110
†Clark, G. A., Secretary to President,	7 Alvarado row,	13
Clevenger, G. H., Acting Instr. Metallurgy,	513 Cowper St., *P. A.*,	22, 134-137
Comings, (Miss) J. A., Asst. Chemistry,	53 Roble Hall,	22, 116-118
†Cooper, W. A., Asst. Prof. German,	1111 Emerson St., *P. A.*,	16, 78-79
Cowan, J. F., Asst. Physiology,	10 Lasuen St.,	23, 124-126
Cox, A. J., Instr. Chemistry,	129 Emerson St., *P. A.*,	19, 116-118

Cravens, (Miss) M. R., Asst. Zoology,	45 Roble Hall,	23, 131
Crawford, W. E., Asst. Chemistry,	172 Encina Hall,	22, 116-118
Crosier, (Miss) M. T., Asst. Library,	16 Alvarado row,	24, 148
†Cubberly, E. P., Assoc. Prof. Education,	[New York City]	13, 94-96
Curtis, K. L., Instr. Electrical Eng.,	162 Encina Hall,	20, 145-146
Cutter, L. E., Asst. Applied Math.,	*Mountain View,*	22, 112-113
Dennis, W. C., Asst. Prof. Law,	161 Encina Hall,	18, 104-108
Dey, B. C., Asst. Library,	14 Lasuen St.,	24, 148
†Dodge, M. G., Assoc. Librarian,	11 Alvarado Row,	14, 148-149
Dole, N. E., Asst. Chemistry,	11 Lasuen St.,	22, 65, 116-119
Dudley, W. R., Prof. Botany,	318 Lincoln Ave.,	11, 122-123
Duncan, C. L., Asst. Encina Gym.,	29 Encina Hall,	23,128
†Duniway, C. A., Assoc. Prof. Hist.,	5 Alvarado row,	13, 98-101
†Durand, W. F., Prof. Mech. Eng.,	3 Salvatierra St.,	12, 143-145
†Eckart, W. R., Jr., Asst. Prof. Mech. Eng.,	1125 Ramona St., *P. A.,*	18, 143-144
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